THE ST QUARTERLY

START

The #1 Guide to the Atari ST

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Disk Inside

Summer 1988 Volume 3, Number 1

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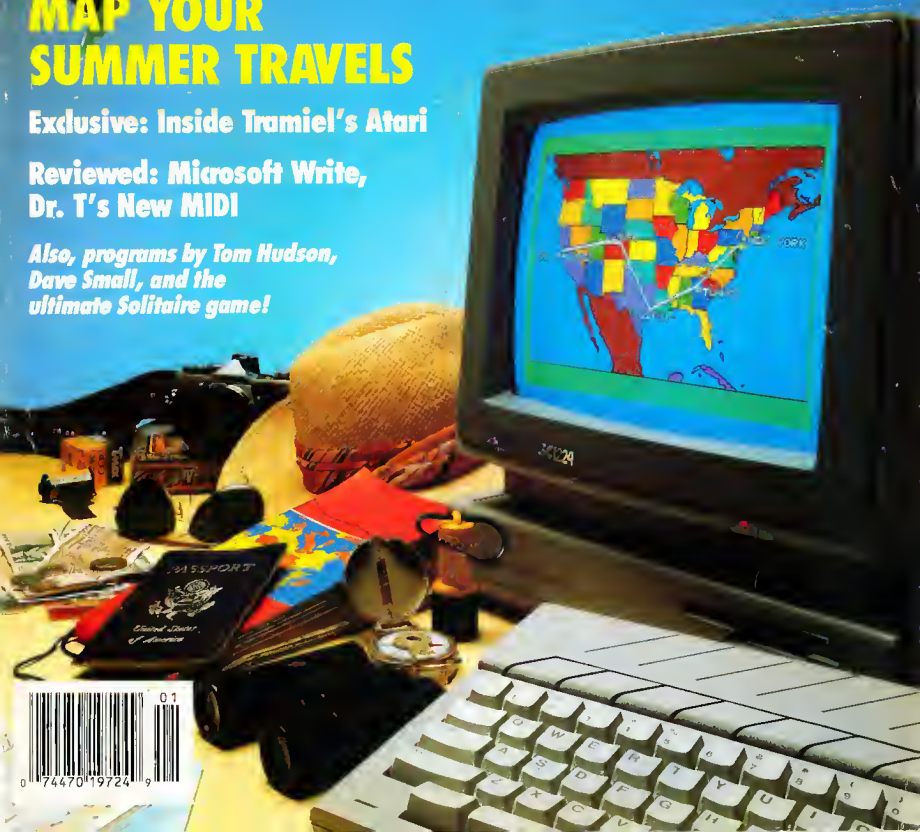

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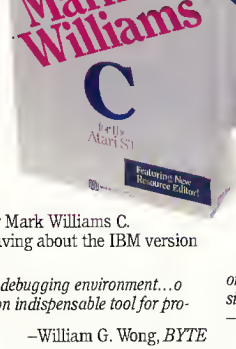

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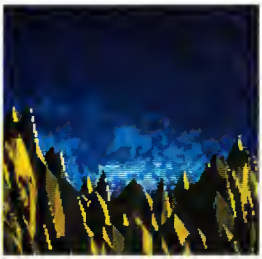
VOLUME 3, NUMBER 1

Beam me up, Scotty . . . . . *page 90*



Fractal landscape . . . . . *page 54*

Mick's MIDI moves . . . . . *page 70*

FEATURES:

Three Years with the ST
An Exclusive Look Inside Tramiel's Atari
Jeffrey Daniels 22

The Traveler
Minimize Your Travel Mileage and Costs
Ron Schaefer, M.D. 30

Igor!
A Little Helper For Your ST
John H. Jenkins 41

DEPARTMENTS:

Icanagraphics
Creation!
Build Mountains with START's Fractal Landscape Generator
Tom Hudson 54

Music
Dr. T's Musical Workstation
From Random Thoughts to Finished Score
Jim Pierson-Perry 73

Arcade
North to Alaska
START's Klondike Solitaire Game
Rob Lech 95

FEATURE REVIEW:

Microsoft Write
Ian Chadwick 36

COLUMNS:

Mac & PC on the ST
The Ultimate ST Spreadsheet?
Jim Pierson-Perry 44

Getting Started
Floppy Disks
Frank Hayes 47

The Cyber Corner
Andrew Reese 64

Small Tools
Let's Twist Again
Dave Small with Dan Moore 67

Making Tracks With MIDI
Mick Fleetwood Mard Naman 70

Programming in BASIC
Resourceful GFA BASIC
John L. Hutchinson 79

Online With START
Summer Fun
Gregg Pearlman 87

Far The Fun Of It
Dave Plotkin 90

SECTIONS:

Editorial 6

Dialog Box 8

News, Notes, and Quotes 12

Products Update 19

Disk Instructions 50

Clipboard 52

START Chart 83

Advertising Infarmation 98

Indicates programs inctuded on START Disk. See order card on page 50 if you did not buy Disk Version.

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The #1 Guide to the Atari ST

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EDITORIAL

The Atari ST has been on the market for three years now, and in our feature article this issue, *Three Years With the ST*, Jeffrey Daniels traces its development and gives you a never-before-published look at Atari from the inside. Whether you just bought your ST or were among the first to buy developer's systems (as Antic Publishing was), you'll be fascinated by Daniels's report.

START has been a part of the ST world for two of those three years. As we've published more and more issues, their value to you as a reference source has grown—but so too has the problem of finding what you need quickly. To solve this problem, we've provided a complete index to date of START and Antic's ST Resource in both ASCII and database format. *Plus*, START's Programs Editor Heidi Brumbaugh has written a nifty little utility to convert the database format index file into CardSTak—or almost any other format. Use your own favorite DB manager to locate that one article you've been looking for. It's all on your START disk this month.

As ST ownership has expanded, some readers have asked us for broad coverage of the ST world and articles to help them learn ST basics. Other readers want in-depth coverage of specific ST interests. To help give you what you need, we're beginning four new columns this issue.

Small Tools, written by Dave Small, is for all of us who have ever needed to solve a problem on our STs. Small, the iconoclastic designer of the Magic Sac, has revised his Twister disk formatting program to operate with the new TOS ROMs. In *Small Tools*, he tells why and how. James Pierson-Perry kicks off our *Mac and PC on the ST* column with "The Perfect Spreadsheet?" We also begin in-depth coverage of *Programming in BASIC* this issue with the first part of John L. Hutchinson's lucid explanation of GEM Resource files. Finally, yours truly begins *The Cyber Corner* for those who use—or want to use—the Cyber Studio and related graphics programs.

And don't miss this issue's START disk! Not only do you get the START Index, Mega Twister and a Cyber Control program for automatic object scaling, you also get The Traveler to help you plan your vacation; Creation!, Tom Hudson's *tour-de-force* fractal landscape generator; Igor, a wonderful desk accessory that allows you to create your own custom Help Screens; and START Klondike Solitaire, the best darned solitaire game ever on any computer, anywhere!

As Frank Hayes, START's Senior Editor, reports in *News, Notes & Quotes*, most of Atari's current ST production is sold in Europe. If you would like to see Atari turn its attention back to the U.S. market, write Jack Tramiel and tell him directly. No nasty letters, now—just tell him what computer stores in your area you would like to see carry Atari products and what it would take for you to buy more from Atari. Send your letters to Mr. Jack Tramiel, Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086, with a copy to us here at START.

So long and enjoy your summer computing. Oh, and the red six goes on the black seven! ■

Andrew Reese
Editor
START, The ST Quarterly

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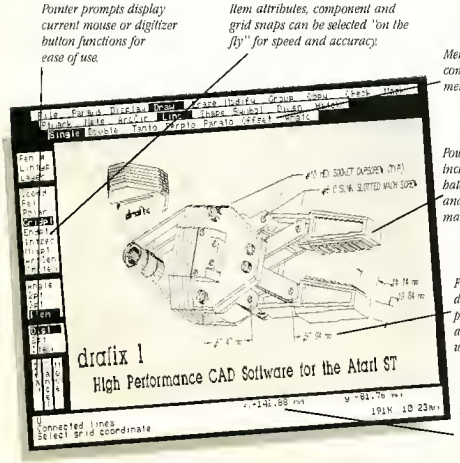

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$600 START

Your Winter 1987 issue of START blew my mind! The included disk with STARTKey is worth about $600 to me. I subscribe to the Dvorak newsletter and they state a Silver Reed typewriter/printer with a switchable QWERTY/Dvorak keyboard costs about $600. I therefore upgraded my Atari 1040 by $600 with your STARTKey disk to a QWERTY/Dvorak switchable keyboard just for the price of your magazine.

I have only one problem and that is that I cannot lock capitals in Dvorak. I like to write my letters in Navy-style capitals. Can anyone please solve this problem for me?

Tony Mallin
Chicago, IL

STARTKey does not pay any attention to the state of the Caps Lock key, and is not case-sensitive, so a macro file containing:
R "P" macend
r "p" macend
s-r "P" macend
would cancel itself out. The best suggestion we can make, since you prefer to use capital letters all the time, is to create a new macro file with all the keys defined as Dvorak capitals. You might want to define the shift characters to the lowercase Dvorak equivalent, so you still have access to them:
r "P" macend
s-r "p" macend
Once you've compiled the new file, you can switch between it and the Dvorak keyboard on your Winter, 1987 START disk by using the Load option in STARTKey.

DOLLARS & SENSE VS. PHASAR

I'd like to comment on Jeffrey Daniels' review of Personal Finance programs (Spring 1988 START). It appears to me that Mr. Daniels has been unduly swayed by the superficial aspects of those programs.

I purchased Dollars and Sense in December 1986 and Phasar in February 1987. In order to determine for myself which was the better program for my purposes, I kept my personal financial records with both (yes, I entered every transaction twice).

My initial impression of Dollars and Sense was that it was a very good program. However, after using it for several months, I found that the features that looked the best at first became the very things that irked me the most. I didn't need presentation-quality reports (which I couldn't do anyhow because of the lack of page formatting), and waiting for the slow GDOS output was just a waste of time.

My major complaint (and the reason I've stopped using it) is that the program has many significant bugs: simple edits to existing transactions usually corrupted the data file so that it had to be restored from my last backup, losing several transactions in the process. The final straw was when I discovered that correcting an entry error required the re-entry of over three months' worth of transactions. Although I paid the extra fee for customer support, the one letter I wrote was never answered and there have not been any upgrades or bug fixes in the 15 months that this program has been out. Because of the number and severity of the bugs, I rate Dollars and Sense not acceptable.

On the other hand, I found Phasar to be a jewel. True, the manual is a bit folksy and the program uses GEM for only the top-level menu selections, but it works and works well. In over a year of use, I haven't lost a bit of data to a program bug!

The manual could be improved, but ▸

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it does have a lot of information and a very extensive index. I made some suggestions that were graciously accepted by Marksman Technology. From that experience, I would expect excellent customer support. For my personal and home financial record keeping, I rate Phasar excellent.

Marvin W. Rasmussen
Austin, TX

THE GREAT DEBATE GOES ON

I have been programming on the ST for about two years now and have seen many different programming styles. Recently, I have noticed the lack of structure in some programs. If anyone were to take a reasonably good computer programming class they would learn some basic things about structured programming. For example, in Pascal, most programmers with structured styles will *not* use global variables, they will use only local variables and pass parameters. Another example is the undisiplined use of GOTO statements. How are beginning programmers to learn good technique if they study poorly-structured work?

Jon Rusho
Salt Lake City, UT

The debate about structured programming has been around for some time; what is good technique to one programmer may be anathema to another. For an interesting discussion of the other side of this issue, see if your local Atari user group has a copy of START's Summer 1986 issue in their library (sorry, but we're sold out of that issue, and it's now a collector's item). In it you'll find Dave Small's classic article "Voodoo Computing," in which he went so far as to compare writing structured code to burning incense: "It makes your eyes hurt, and confuses the whole ceremony, but does make you feel you have accomplished something."

IBM & MAC SOFTWARE CROSSOVER

I use the IBM program Managing Your Money on my ST, running it with pc-ditto. While Managing Your Money is slow at times, it's easy to use and seems reliable. I would love to switch back to an ST product, but this is one type of program where I feel that it's absolutely necessary that the data not be compromised. Any chance of you doing a head-to-head comparison between related IBM and ST software, letting us know how they stack up?

If Desk accessories load automatically, do they screw up games?

One more thing—I've recently joined the ranks of the hard disk owners and I was wondering if you could run some articles on organizing ST hard drives, including tips on using them with pc-ditto and the Magic Sac. Since I use my computer for convenience, I would like to be able to automate as much as possible. How about desk accessories—if they load automatically each time, do they screw up games? Do they screw up pc-ditto? There's a lot of potential information to cover.

Thanks for a great magazine.
Ira Kreiger
New York, NY

We intend to cover a lot of ground with our new "Mac and PC on the ST" column, which begins this issue. We also welcome your suggestions on what Apple Macintosh of IBM PC software you'd like to see us review.

The next installment of "Getting Started" -- our new owners column—will focus on selecting, organizing and using hard drives.

Now, since most games are copy-protected and must boot from the original disk, you'll probably want to turn off your hard drive first. If the game is not copy-protected, the presence of desk accessories shouldn't interfere with game operation unless the game is quite memory-intensive.

Avant Garde Systems, makers of the pc-ditto IBM emulator, have found that only a few ST users have reported problems using pc-ditto with desk accessories. Again, the main culprit appears to be memory-intensive programs (on the IBM side).

WANTS MORE ON DESKTOP VIDEO

In your article "Desktop Video" (START Special Issue #2—Graphics and Music), you mention the use of an RGB-to-composite video converter, but not where one can be found. I own an Atari 1040 ST—which doesn't provide composite video out—and the only unit I've heard of is one made by Practical Solutions. Viewing its output at a recent show, it definitely outdoes the 520 STFM's in color saturation and stability, but are there others?

Incidentally, I have seen a preliminary version of another unit they are going to be putting out soon that will really open up the possibilities in this area! It is an Atari video generator/overlay/genlock unit, which will reportedly provide not only composite video generation, but will also allow the overlaying of this video onto another source, such as a VCR or TV. Apparently, the position and fade of the two video

sources can be controlled. with the overlaid image being output for recording. Also, it was mentioned that the genlock output will allow additional video sources–or a camera–to be synchronized to the unit, while an audio mixer is supposed to be part of the unit itself (I guess you'll also be able to mix the audio track as well!).

The uses of such a unit could open are limitless in this arena–from titling of home video productions to overlaying full animation sequences upon a "layered" production. Truly, the ST is approaching the realm of studio animation productions! Perhaps you could write a follow-up article on the types of hardware available? Please keep articles like these coming, and keep up the good work!

Brian Corzillius
Ithaca, NY

The Practical Solutions RGB-to-composite converter, Video Key ($119.95), has color ports for an RGB monitor as well as a composite port for composite video or VCR and an RF port for regular television. E. Arthur Brown Company also has an RGB-to-composite converter ($24.95); theirs is a cable that will convert the ST output to gray scales on a composite monitor.

Practical Solutions said their genlock device is still in its prototype stage and should be released late summer or early fall. It will have translucent, transparent and opaque overlays based on any background color. It will let you use your ST's full or partial screen, but won't allow overscan. Unfortunately, however, there are no plans at this point to include an audio mixer. (Read START for ongoing coverage of desktop video products, both hardware and software.) You can contact Practical Solutions at 1930 E. Grant Rd., Tucson, AZ 85719; their phone is (602) 884-9612. For the E. Arthur Brown Company, write to 3404 Pawnee Dr., Alexandria, MN 56308, or call (612) 762-8847. ■

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CIRCLE 009 ON READER SERVICE CARD

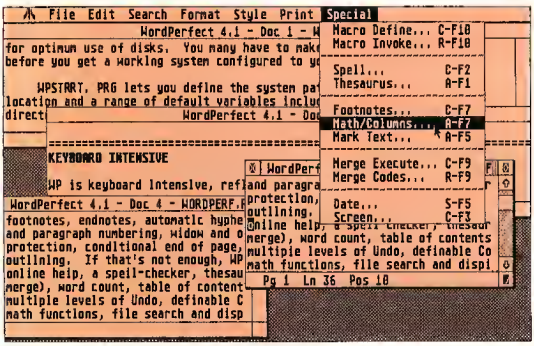
NEWS, NOTES & QUOTES

by Frank Hayes, START Senior Editor

Word Perfect Furor

A furor erupted this spring on CompuServe after a **WordPerfect** employee leaked word that because of piracy problems, WordPerfect was abandoning the ST version of its powerful word-processing program. Ron Luks, Chief Sysop of CompuServe's Atari forums, learned from the WordPerfect employee that because WP had discovered their software on at least three pirate bulletin-board systems, the company was pulling out of the ST market.

Luks spread the word on CompuServe, and threats and recriminations flew thick and fast. WordPerfect's Dan Lunt, vice president of marketing, finally went public with an official statement: WP was *not* pulling out of the ST market, though the company is concerned about piracy. The final result was an online conference on WordPerfect and piracy, which remains a major problem for ST software publishers.



WordPerfect with four open text windows.

Meanwhile, the most recent version of WP at this writing is dated 3/25/88, and it's a big improvement—sort of. Unfortunately, due to a production error at WP, the March 25 update was sent out with a non-updated version of the program. However, the spelling checker *was* the correct version, and it's a big improvement over the previous version. WP sent out a completely new update—with the *correct* version of the program—as soon as they discovered the error. WordPerfect for the Atari ST is $395 from WordPerfect Corporation, 288 West Center St., Orem, UT 84057; phone (801) 225-5000.

The Biggest Atari Show In The World

The **Hannover Fair** in Hannover, West Germany, is big—the biggest computer show in the world, with more than 300,000 attendees. And in Germany, the Atari ST is the best-selling personal computer, so Atari was very well represented at this year's Fair. The Atari booth was 50 feet by 50 feet, and crowded all seven days—you had to elbow your way in through the mixture of families, business people, students and scientists to see what was new with Atari.

In addition to the booth, Atari was privately showing several upcoming products. One is the first Atari computer using the **Motorola 68030** CPU; the hand-built prototype is specifically designed to run the **Unix** operating system. There's also a **44-megabyte hard disk** for the ST that uses removable cartridges—in other words, *each cartridge* will hold 44 megabytes.

A select few also got a chance to look at Atari's **portable ST**, which (rumor has it) will be introduced in Europe within a year. Another rumor was of an **ST game machine**—a stripped-down ST that's designed for playing cartridge-based games using an ordinary TV. Atari was also showing the **Abaq**—the transputer-based graphics workstation that first appeared last November at the winter Consumer Electronics Show in Las Vegas.

Jack Tramiel was at Hannover, and he talked about Atari's difficulties getting enough memory chips for its com- ▸

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puters. He said the American tariffs had hurt consumers more than anyone else, and because of the shortage of chips, most STs are being shipped to Europe. (You'll see more about Atari's chip problems elsewhere in News.)

Notes From All Over:

Germany: The ST is popular among German engineers; lots of labs use it to connect to real-world input, using A/D and D/A (analog-to-digital and digital-to-analog) converters. Donald Knuth's **TeX** and **Metafont** graphics systems, which are popular among scientists for highly specialized mathematical desktop publishing, are also available. There are business programs by the score, including such IBM standards as **WordStar** and **dBase II**. The ST version of Borland's **Turbo C** has just arrived in Germany (and if you'd like to see it in this country, write a letter to Philippe Kahn at Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066, and tell him so).

Then there's **Adimans**—which looks to be the most powerful relational database for **any** personal computer. It also runs on mainframes and minicomputers from IBM and Hewlett-Packard at prices as high as $18,000, as well as on the IBM PC. It should be in the U.S. soon for the ST, at a price around $200. There are new versions of BASIC in Germany, including a very fast compiled BASIC and one designed especially for writing games. Markt & Technik will be marketing Antic Software's **Cyber Family** products in Europe, including CAD-3D and Cyber Paint.

France: **ZZ-Rough** is a drawing program that emulates the way a professional paste-up artist works, complete with blue pencil, charcoal and erasers. We also saw a high-resolution video graphics generator with 1,000 by 1,000 pixel resolution, 16 million colors, and built-in genlock for overlaying graphics on an external video signal from a camera or VCR.

Benelux: In Belgium, the Netherlands and Luxembourg the ST is also strong. The **Netherlands' national railroad** just purchased more than 3,000 STs. And one of Amsterdam's biggest recording studios—where the likes of Mick Jagger and Elton John have recorded albums—has junked all its analog synthesizers and replaced them with four STs and new MIDI equipment.

England: The transputer-based Abaq should be commercially available soon, and some of the best English-language games for the ST are coming from England's **Telecom Soft**. There's also some interesting work on robotics—we should be hearing more from England about ST-powered robots very soon.

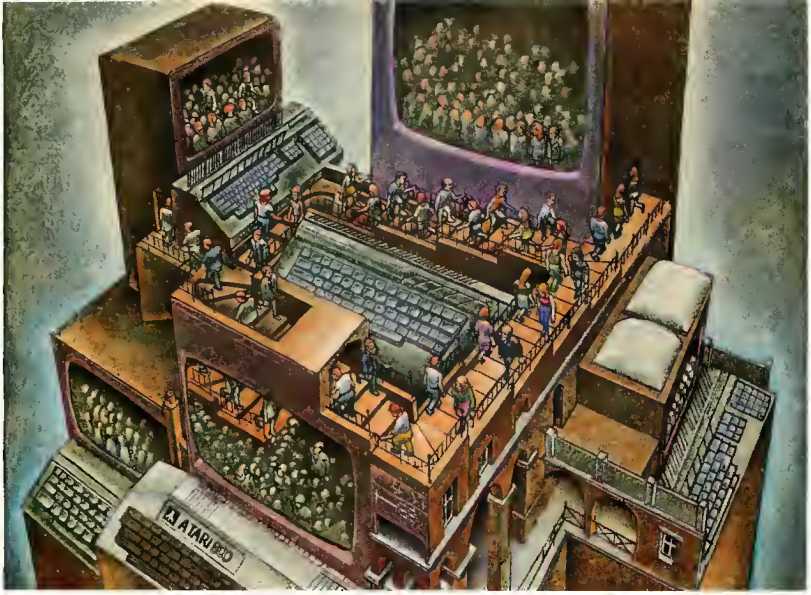
Snapshots: Tom Harker, president of ICD, showing ICD's **100-megabyte ST hard disk**; Gordon Monnier of MichTron, looking for new products to bring to the U.S.; Oren Asher of ISD (the VIP Professional people), who are about to bring the high-powered desktop publishing system **Calamus** to this side of the Atlantic; and START Publisher James Capparell, whose notes on the Hannover Fair made this report possible. ▶

Chip Shot

In mid-March, Atari sued chipmaker **Micron Technology, Inc.**, claiming that Micron had agreed to sell it 3 million memory chips at $3.75 each, then tried to raise the price. Micron denies having made the deal.

Atari has had trouble getting the dynamic random-access memory (DRAM) chips it needs ever since the U.S. government slapped trade restrictions on Japanese and other chip suppliers. The government objected to the Japanese selling so many memory chips in the U.S.; because of foreign competition, only two companies (Micron and Texas Instruments) still manufacture DRAM chips in this country. But since the tariffs and restrictions were imposed, a shortage of DRAMs has developed; Apple and other computer manufacturers have also complained about tight supplies, but Atari is the first to sue a DRAM maker for chip-price gouging.

Because Atari builds most of its computers in the Far East, the machines also face hefty tariffs when they're imported into the U.S.—and that means higher prices. As a result, most STs are now being shipped to Europe, where the ST is very popular and the tariff problems don't exist. As a result, many U.S. dealers are experiencing shortages of STs and other Atari products. Atari was hoping to open a new manufacturing plant in the U.S. this spring to sidestep the tariff problems, but the chip shortage has delayed that plant opening indefinitely.



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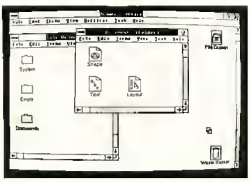
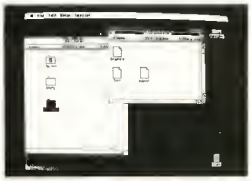
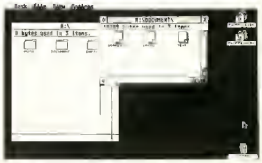
NEWS, NOTES & QUOTES

Dot Dot Dot. . .

A pirate BBS system in Florida that offered callers 250 illegally copied programs, most of them for the Atari ST, has been shut down. The board took orders by modem, then mailed out illegal copies of the software from MichTron, Origin Systems, Electronic Arts, and other companies. The **Software Publishers Association** is offering $50 rewards for information that will help shut down pirate BBSs. . . .QuickView Systems' Zoomracks II, the HyperCard-like program for the ST, is now **Zoomracks III**. New features of the program include better graphics and printing controls; there's now Zoomracks support on GEnie, too. According to Paul Heckel, designer of Zoomracks, the program was recently the key to a deal to sell nearly 10,000 ST systems. Zoomracks III is $295 (upgrading from Zoomracks II is $175) from QuickView Systems, 146 Main St., Suite 404, Los Altos, CA 94022; phone (415) 965-0327. . . .In March, **Apple Computer** sued Microsoft Corp. and Hewlett-Packard for copyright infringement, claiming that Microsoft's Windows and Hewlett-Packard's New Wave (both programs for the IBM PC) look too much like the Macintosh's display. Longtime ST owners probably remember that when the ST first appeared, Apple threatened to sue Digital Research Inc. (creators of GEM, the ST's mouse-and-menu interface). DRI changed the IBM version of GEM, but Atari refused to change its version. Microsoft and H-P deny they've infringed any of Apple's copyrights, and they'll fight the suit in court. . . .**1st Word Plus** and the **GST C** compiler are now distributed in the U.S. by Prospero Software. . . .**Mail-Pro**, the database program from Hi-Tech Advisors that's designed for mailing lists, is now only $39. If you bought the program for $69, you can get a gift certificate for other Hi-Tech Advisors software. For more information, call the company at (813) 294-1885. . . .Mindscape's **Superstar Soccer** will be available for the ST in July, but in the meantime the company has sponsored the first-ever U.S. national indoor soccer youth tournament. Eleven teams from Baltimore to San Diego competed for the 1988 Mindscape Cup; the winners were from Chicago. For more on the tournament or Superstar Soccer, call Mindscape at (312) 480-7667. . . .Buy two **Electronic Arts** programs before June 30, 1988, and you can pick a third one for only $3 for shipping and handling. You can get details from EA at 800-245-4525 (in California, 800-562-1112). . . .If you've got a hot tip or an interesting product for the ST, we'd like to hear from you. Let us know at **News, Notes & Quotes, START, 544 Second Street, San Francisco, CA 94107.** ■







Are these screens *too* similar? The left screen is Hewlett-Packard's New Wave, the middle screen is Apple's Macintosh; the right screen is the Atari ST.

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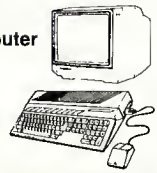

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PRODUCTS UPDATE

By Jon A. Bell
START Associate Editor

Taming the Mighty Mouse

Practical Solutions has a knack for coming up with simple but incredibly useful hardware. If you have both a monochrome and color monitor, their **Monitor Master** is indispensible: It's a box that lets you hook both monitors into your ST simultaneously and switch between them with one push of a button—no more annoying cable swapping.

Now they've come up with another ingenious peripheral—**Mouse Master**, a box that plugs into your mouse and joystick ports. The Mouse Master has *three* ports, allowing you to plug in a mouse and two joysticks, or other peripherals, such as trackballs, and switch among them. Use your ST and mouse for business, then switch to joysticks and play an arcade game with another person. A "must-have" for 1040 owners (you won't have to continually lift your computer off the desk every time you plug in or unplug your mouse). Monitor Master, $49.95; Mouse Master, $39.95. **Practical Solutions, 1930 Grant Rd., Tucson, AZ 85719, (602) 884-9612.**

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Publishing Partner Professional

St. Louis-based Softlogik Corp. has just released their long-awaited **Publishing Partner Professional**, a full-featured desktop publishing program for the ST. Professional includes virtually everything you'd ever want: multiple fonts, type styles and sizes, multiple columns, text wrap (even around unusual shapes, such as circles) and an incredible variety of text and graphics manipulation features (you can scale your text in 1/50th of a point increments, for example). Professional includes an 80,000-word spell checker, and allows you to output your text to dot-matrix printers, Postscript or non-Postscript laser printers or high-end phototypesetting equipment. Publishing Partner Professional, $199.95. **Softlogik Corp., 11137 South Towne Sq., Suite C, St. Louis, MO 63123, (314) 894-8608.**

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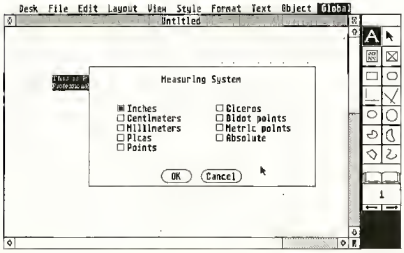

Publishing Partner Professional.

Atari's SLM804 Laser Printer

After being announced over a year ago (January 1987 CES), the Atari **SLM804 Laser Printer** is finally shipping. The SLM804 is a "dumb" laser printer—it has no onboard processor or RAM, and requires an attendant ST or Mega computer to drive it. The Atari Laser runs from the hard disk port (you can connect your hard disk drive through the included interface box). The Laser will print eight pages per minute at 300 DPI resolution, and includes four software disks: the Printer Emulator (for a Diablo 630), the GDOS Driver and two fonts disks. Atari SLM804 Laser Printer, $1999.95. **Atari Corp., 1196 Borregas Ave., P.O. Box 3427, Sunnyvale, CA 940BB, (40B) 745-2000.**

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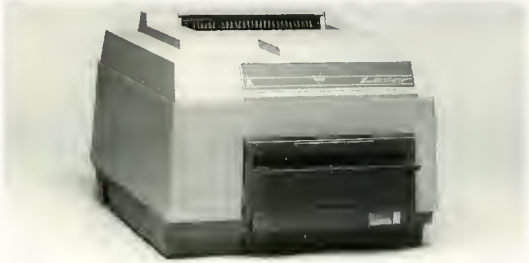

Upgrading GFA BASIC And The Juggler

GFA BASIC, probably the most popular BASIC language for the ST, has just been upgraded. MichTron, GFA's distributor, has just announced **GFA BASIC 3.0**, which should be available as you are reading this. Version 3.0 features 300 *new* commands, and includes a better editor and ALINE and AES support. If you're a registered owner of an earlier version of GFA BASIC, you can get 3.0 for $49.95. (A MichTron spokesman declared that beta versions of 3.0 they've tested don't appear to have any compatibility problems with previous GFA BASIC versions.) GFA BASIC 3.0, $99.95.

Another MichTron upgrade is for The Juggler, a program that allows you to switch among up to *seven* GEM applications (provided they interact correctly with your desk accessories). **Juggler II** can partition your ST's memory into two, four or eight equal sections; whatever application resident in any particular section is treated as if it is the *only* one in your computer's memory. When you press the Alternate and Shift keys, The Juggler freezes program operations in the active partition, then moves to the next one. Juggler II, $39.95. **MichTron, 576 S. Telegraph, Pontiac, MI 48053, (313) 334-5700.**

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Total MIDI Superiority—From Steinberg to Drumware

At the 1988 Winter NAMM (National Association of Music Merchants) show, held January 15-17, the ST once again proved its dominance in the computer music field. Virtually every MIDI software company in attendance had programs for the ST, and most companies were showing new wares—software ranging from ear trainers to advanced sequencers for film and television scoring.

One company, Steinberg Software, was showing a line of music and MIDI programs in virtually every category. **Pro-24 III** is a professional-level se- ▸

quencer that offers real-time editing and the ability to load standard MIDI file song formats, making the program fully compatible with current MIDI utilities. Time-Lock is a SMPTE processor for Pro-24 III, allowing you to read and write to the four available SMPTE modes; it also saves your SMPTE settings to disk with each piece of music you work on. **The Ear** is a music education program that teaches intervals, chords and scales; it requires a MIDI keyboard. **Masterscore** is a powerful music notation and scoring program, allowing you to display and print scores—from a piano sonata to a symphony, on 9-, 24-pin or laser printers. Steinberg was also showing patch editors and librarians for some of the most popular synthesizers: **Synthworks D-50** and **MT-32** are for the Roland D-50 and MT-32, respectively; **Synthworks TX-81Z** is compatible with the Yamaha DX-21, DX-27 and DX-100 synths. Pro-24 III, $295; Time-Lock, $375; The Ear, $99, Masterscore, $350; Synthworks D-50, $259; MT-32, $199; TX-81-Z, $259. **Steinberg Software, distributed by the Russ Jones Marketing Group, 17700 Raymer St., Suite 1001, Northridge, CA 91325, (818) 993-4091.**

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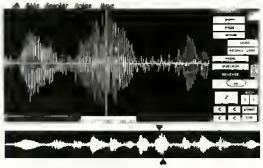
In addition to the "big boys" at NAMM such as Steinberg, Dr. T's and Hybrid Arts, other MIDI companies were also well represented. One of these, Drumware, was making a big splash with **GenWave/12**, a generic waveform sample editor. Fully GEM-based, GenWave/12 allows you to transfer sound data from your sampler to your ST for editing. Edit your samples with the visual waveform editor, process the digital signal and cut and paste snippets of sound. Version 1.0 supports the Emu Emax and SP1200, Sequential

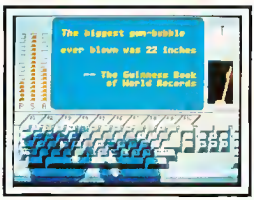


P-2000/2, Akai S900, Oberheim DPX/Prommer and other instruments conforming to the MIDI dump standard. Requires one megabyte. GenWave/12, $299. **Drumware, 12077 Wilshire Blvd., Suite 515, Los Angeles, CA 90025, (213) 478-3956.**

CIRCLE 277 ON READER SERVICE CARD

Great Teacher, But Who is She?

Word processing is the primary use of many personal computers. If you can't touch-type, don't worry—your ST can *teach you*—or, more properly, Mavis Beacon can. Who? Mavis Beacon, famous mythical typing whiz.



Mavis Beacon Teaches Typing is a powerful, multi-level typing tutor featuring many different typing exercises, ranging from basic finger drills to a typing road racing game, complete with bouncy music (no kidding). The program keeps track of your errors, rates your typing speed and provides on-screen graphs to illustrate your progress. You can learn either the QWERTY or Dvorak layout, and lessons are tailored to your individual typing needs. Mavis Beacon's manual includes an entertaining history of typing. Mavis Beacon Teaches Typing, $44.95. **Software Toolworks, One Toolworks Plaza, 13557 Ventura Blvd., Sherman Oaks, CA 91423, (818) 907-6789.**

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Do you have a new ST product? If so, we'd like to hear about it. Please send your press releases and product photos to New Products, START, 544 Second St., San Francisco, CA 94107. ■

3 Years With The ST

An exclusive look inside Tramiel's Atari

When Warner Communications sold a failing Atari to Jack Tramiel, the business community was amazed. When the new Atari demonstrated a revolutionary new computer within six months after the takeover, the computer industry was amazed. Now it's your turn to be amazed as Jeffrey Daniels brings you the inside scoop on how Atari's flagship computer came about—and what Atari is planning for the future.

On Monday, July 2, 1984, Jack Tramiel, his three sons, and a core band of Tramiel loyalists stormed Atari Incorporated's headquarters and took control of Warner Communications' bleeding, teetering Atari subsidiary. A little over five months later, in January 1985, a radically restructured Atari Corporation publicly unveiled its new computer at the Consumer Electronics Show in Las Vegas. During the following spring, they shipped approximately 100 custom ST units to third-party software developers. And in June of that year, against all odds and amid widespread, doomsaying prognostications from industry pundits, the first production model Atari 520 ST computers rolled off the assembly line in Taiwan.

It had been a wild, wild ride.

AN EXHILIRATING FIRST YEAR

"I tell you, it was very exhilarating," recalls Shiraz Shivji, Atari's Vice Presi-

by Jeffrey Daniels

dent for Research and Development. "During those days, I used to get home at about ten o'clock at night, six days a week. Sunday was about the only day we took off – sometimes we couldn't take off Sunday. I remember New Year's Eve [as the company scrambled to meet its self-imposed January 1985 CES deadline]. I was working that night when the firecrackers started popping, then well on into the New Year."

"It was a miracle," says Richard Frick, one of a handful of Warner veterans still at Atari and now Director of OEM (Original Equipment Manufacturer) and VAR (Value Added Reseller) Sales. "You could come here almost any day of the week and find people working very late at night, then on weekends. The parking lot was always full."

THE MAKING OF THE ST

Contrary to popular myth, the ST did *not* exist in any shape or form at Atari prior to the Tramiels' takeover. Planning for what was to become the Atari ST began in late April and early May of 1984. The first step was when Jack Tramiel formed a small company called Tramiel Technology, Ltd. He then gradually began to bring together people from around the world, all ex-Commodore employees, with the specific intention of designing, manufacturing, then somehow marketing a new, popular-priced computer. But in those first weeks, acquiring Atari was still just a dream.

By the end of May, Tramiel Technology had rented a room at an apartment complex in Sunnyvale, and the core group of Tramiel recruits began to plan their new machine and to seek out a way to market it. Shortly thereafter, the negotiations with Warner Communications began to heat up.

"What the product was going to be and what it looked like was already very clear in our minds," Shivji says in recalling that time. "The work had already started. We knew what we wanted in a computing engine, what we wanted in a user interface. There was going to be a windowing system, it was going to have bit-mapped graphics, we knew roughly speaking what the [screen] resolutions were going to be, and so on. All those parameters were decided before the takeover. The idea was an advanced computer, 16/32-bit, good graphics, good sound, MIDI, the whole thing – a fun computer – but with the latest in software technology."

THE ST TAKES SHAPE

Shivji soon had a block diagram of the machine on paper, but a detailed schematic was still months away. At least three CPU chip sets were under consideration, and the design engineers were still not sold on the Motorola 68000, the microprocessor at the heart of today's ST. Originally, the ST was in- ▸

Dave Staugas

The "Monterey Group." In September 1984, Atari sent most of its software engineers down to Digital Research's facilities in Monterey, California to begin the port of GEM. Their task was to translate Digital's IBM PC assembly code into 68000 code.

THREE YEARS...

tended to be a *true* 32-bit machine.

"We were hot on the 32016 and 32032," Shivji said. "We had a bunch of meetings with National Semiconductor regarding the availability of the chip, and when it was obvious that we could not have the number of chips that we wanted and the pricing was not right, then the decision was made to go with the 68000. Actually, what happened also was that eventually we even built a unit based on the National 32032 and we were quite disappointed."

Jack Tramiel's son Leonard flew out to Silicon Valley in May to meet with his father, Shivji, and others to discuss the new machine. "At that time we went through an awful lot of details about what should be in where, how everything should work, and we had discussions with Digital Research [the developers of GEM]—the whole bit," Leonard noted.

John Feagans, a software engineer who had recently departed Commodore, was among the original strategists. "We went down to Digital Research," he said. "GEM wasn't called 'GEM' at that time. It was called 'Crystal'. They showed it to us working on an Apple Lisa. Well, actually, it was all smoke and mirrors. There was hardly anything of use in that demo, because they had devoted their entire programming effort to putting it on the IBM PC."

A GEM OF AN IDEA

The version of GEM first demonstrated to Tramiel Technology was actually running on top of CP/M-68K. Indeed, GEM's CP/M-68K incarnation was the only version of GEM available for the 68000 microprocessor at the time, and Atari would continue to plan for it to be the ST's underlying operating system in the months to come.

Though negotiations with Digital Research were going well by June, Jack Tramiel had made no final decision, and system software was thus still up in the air by the time of his Atari takeover.

Shiraz Shivji, Atari's Vice President for Research and Development. The "father" of Atari's first 16-bit computer—the ST.

The company was confronted with two obvious choices for the new machine's system software: either adapt an "off-the-shelf" package (such as GEM) or write a new operating system. Time was short, and programming personnel, both late of Warner's Atari and those from Commodore, were still relative unknowns to top company officials.

"Basically we had a bunch of programmers we knew nothing about," Leonard said. "We did not know—we could not know—that we had the talent in-house to design and write our own OS. With GEM we had something that was already laid out and planned based on a previously existing product [GEM on the IBM PC]."

Soon after the takeover, Microsoft began to court the new Atari in an effort to sell Windows as the ST's operating system, and Leonard had several meetings with them. But Microsoft's Windows was still almost two years away, and Digital's GEM was much further along. The new Atari decided to go with Digital Research.

In September 1984, Atari sent most of its software engineers down to Digital Research's facilities in Monterey, California, to begin the port of GEM. The software group lived there for most of the following four months, some staying on longer. Their task was to translate Digital's IBM PC assembly code, written for the 8086 microprocessor, into 68000 code, and also to rewrite and recompile Digital's C code on the ST system.

It was a monstrous task. Dave Staugas, who ported the text blit and later wrote the ST's NEOchrome paint program, remembers that time: "The killer was that Digital Research would give me this 8086 code and say, 'Translate this,' and then a week later they'd say, 'Oh, there were a lot of bugs in that, here's the new one.' I never really had a spec. The latest code was the spec."

Miraculously, by the beginning of January 1985 all the pieces began to come together. Atari officials realized they would meet the CES deadline, and they did: they shipped five STs to Las Vegas, with GEM still running on top of CP/M-68K.

For Shivji, this was the climactic, energizing moment: "The really exciting thing was that in five months we actually showed the product at CES with real chips, with real PC8s, with real monitors, with real plastic. Five months previous to that there was nothing that existed. You're talking about tooling for plastic, you're talking about getting an enormous software task done. And when we went to CES, 85 percent of the machine was done. We had windows, we had all kinds of stuff. People were looking for the VAX that was running all this stuff."

HARD CHOICES, HARD TIMES

Atari's first CES was an unequivocal success. Though product was not ready to ship and Atari had not yet signed on great numbers of computer retailers, the company had nonetheless brought off a tremendous public relations coup. Doubters stood amazed, the faithful beamed, and Jack Tramiel's oft-quoted

comment to the naysayers at CES was "Oh ye of little faith."

Yet Atari still had much work ahead of them. In February, GEMDOS was nearly complete and Atari had to make a crucial decision: should they continue with CP/M-68K or to move on to GEMDOS? Leonard explains: "That was an extremely difficult decision to make. CP/M-68K had been around several years; it was a well-known, well-understood, relatively well-accepted existing operating system. GEMDOS was a completely brand-new, untried, untested, incomplete operating system However, it also offered significantly higher performance and gave the full hierarchical file system that CP/M-68K simply did not have. It was quite a difficult decision to make, but I think we went in the right direction going with GEMDOS."

The ST did not exist in ony form ot Atori prior to Jock Tromiel's tokeover.

GEMDOS, while not written as an MS-DOS clone, nonetheless was modeled on MS-DOS. There is nearly a one-to-one correspondence between GEMDOS operating system calls and those of MS-DOS, and the mechanism for storing files on disk is identical—which is why ST disk drives can read IBM disks.

"It gave us a connection to the PC world," says Mike Schmal, software engineer and one of the architects of the ST's system software. "With GEMDOS, programmers better understood our code. We gave them the impression that they were already in their own world. They didn't have to learn the ins and outs of a whole new OS, which would have happened if we had written our own."

Throughout the spring of 1985, Atari shipped custom-built STs to developers. But during that spring, even as the hard work and dedication of so many was paying off, the corporation's health was at its most critical stage. "At CES, the gods were smiling on us," recalls Neil Harris, Director of Marketing Communications. "I think the most interesting period of time really was the time right after CES, the next few months. That's when we were really scraping the bottom of the barrel in terms of how much cash we had available. Jack Tramiel had put $30 million in the company, and we were down to the point of: 'What's our payroll this week, how much cash do we have in the bank, what can we do to keep going?' We had sold everything there was to sell off. We had no cash flow from new products. Here we are in March saying, 'Is Jack going to pull the plug on us?' It was a scary time. Everybody was really slaving away—a major team effort—to try just to get through this until we had products to ship."

Of course, Atari did finally begin shipping products, first in May with the XE line, then in June with the new STs. The bleakest period was over, and the company—along with its flagship 520 ST computer—began to blossom.

AN IMPORTANT GROWTH PERIOD

In its March 1986 issue, *Byte* magazine previewed the Atari 1040 ST, hailing it as the first personal computer priced under one dollar per kilobyte of memory. With the introduction of the 1040ST, Atari had once again catapulted itself as the clear leader in offering high performance computing without the high price.

Throughout that year sales steadily increased, and the company enjoyed increased profitability and growth. Their bottom-line gains and an aggressive, cost-cutting management team attracted Wall Street, and in November of 1986 Tramiel took Atari public. At one point during the summer of 1987, the stock was selling for nearly triple its offering price.

THE ST MARKET: U.S. VS. EUROPE

The Tramiels have accomplished much in the four years since they wrested Atari from Warner Communications, but there's still room for further successes and improvements. Company officials routinely concur that ST sales in the U.S. must improve. The ST sells phenomenally well in Europe, especially in Germany and the United Kingdom. But domestic sales haven't grown as hoped, and the introduction of the Mega line—replete with a new laser printer and hard disk drive—has not significantly improved matters.

Why has the ST sold so well in Eu- ▶

Jack Tramiel. His July 1984 purchase of the ailing Atari saved the company.

Julie Pajunsky

THREE YEARS...

Patrick Johnson

Sam and Leonard Tramiel. Leonard had several meetings with Microsoft as they began to court the new Atari in an effort to sell Windows as the ST's operating system.

rope, yet not taken off in the United States? Leonard Tramiel offers the following theory: "There are several reasons. One is that the United States has this terrible disease called IBM-itis, and the IBM PC had gotten a pretty good stranglehold on business here. Plus, Apple had never gotten its stranglehold on Europe. What you wound up with in Europe was the PC, Mac, and ST all arriving at just about the same time. People had a fair, uniform comparison, 'Which of these machines do you want?' and they looked at the price and performance and people bought STs. In the U.S., we had to fight an I-don't-know-how-many-hundred-million-dollar propaganda campaign from Apple, and we didn't have hundreds of millions of dollars to spend on propaganda. Finally, the phrase, 'No one was ever fired for buying an IBM' I don't believe has ever been translated into German."

ATARI AND ITS PUBLIC

Atari has been criticized in the past for a less than robust developer support program, although they're taking steps to improve their technical support program. Roy Good, newly hired as Manager of Product Development, outlines the plan:

"We're beefing up our own internal support capability. We're trying to do it from the inside out, recognizing that there is certainly a perceived problem out there. We're putting effort into developer documentation and also into formalizing the support mechanism. We're putting in place a problem tracking system, which will be a database, and will contain all known bugs, reported bugs, and requests for enhancements. That will be the sole database for any future products (including the new TOS revision). So we'll know for any particular product what the problems are and what the requests are so we can address them. We're putting that in now and it should be up by April. Once we have it shaken down, we'll distribute it to subsidiaries (worldwide)."

The March 1986 *Byte* magazine article mentioned that critics of the ST often bemoan the dearth of good software, and that many of the early software packages were ports that did not take advantage of the ST's capabilities. However, Atari is proud to point out that the ST software scene has improved dramatically in the last two years, and that large and popular software houses, such as Microsoft and WordPerfect, have now jumped on the ST bandwagon. "You don't get much bigger names than those," notes Leonard Tramiel.

ATARI'S CD-ROM AND THE LEGENDARY EST

With the introduction of the Mega line and Atari's CD-ROM well on its way, Atari officials feel that the ST product line is poised for a major breakthrough in this country.

"We've always said that we are going to have the ST computer as a family of products," says Shivji. "There are many logical extensions of the ST. We're trying to do it in such a way that the software investment you have does not die. We have several enhancements planned."

The Atari CD ROM player is one of those enhancements, and is well on its ▶

2 Years With START

The START Index

by Jon A. Bell and Heidi Brumbaugh

When the Atari 520 ST first became available to developers, Antic Publishing was there. Our ST arrived in March 1985, and by August there was a regular ST section every month in Antic magazine—with the catchy title "ST Section." (By the following spring it had become Antic's ST Resource.)

The ST Section's articles ranged from software reviews to examinations of the ST's internals to type-in ST software. But Antic publisher James Capparell knew ST owners wanted their own magazine, complete with programs on disk—and thus, with its Summer 1986 issue, START was born. START began as a resource for developers and hackers—the technically sophisticated people who bought the earliest STs. Today, on our second birthday, we're the #1 resource for *all* ST users.

To make it easier for you to find your way through our three years of ST coverage, START contributor Dave Plotkin has compiled the START Index. It's a complete database of *every* ST article, review and program from START, as well as Antic's ST Section and ST Resource.

Here's how to use it: First, copy the files INDEX.ARC and ARCX.TTP to a freshly formatted disk. Double-click on ARCX.TTP and type INDEX.ARC, then press Return. The disk will spin, your ST will tell you what files it's creating, and when you return to the Desktop the uncompressed index files will be on your disk.

There are two copies of the index. INDEX.TXT is a text file that you can print out or show on the screen by double-clicking on it from the Desktop. The index is in alphabetical order by title. INDEX.FRM has each field of the index on a separate line. To help you create a format your database manager will understand, we've included CONVERT, a GFA BASIC program in both source code (CONVERT.LST) and a compiled version (CONVERT.PRG). Run CONVERT.PRG, then click on Load Data under the File menu and select INDEX.FRM. (The file CONVERT.RSC must be in the same directory as CONVERT.PRG.) When the program has finished loading the data, click on Save Data. If you are using CardSTak from START's Business Applications special issue, simply click on CardSTak and the File Converter will prompt you for an output file name and then write the index to disk in CardSTak format.

If you are using another database manager, click on Delimit. A dialog box will ask you for the delimited format values. These values tell which character will delimit (set apart) the fields, and which character will delimit the records. The default values are 44 (the ASCII value for a comma) as a field delimiter and carriage return/linefeed as a record delimiter. To change these values, enter the decimal value of the new delimiter. If you want to enclose the fields in quotation marks highlight the box next to this option; the default value is On. Some database managers interpret anything in quotation marks to be text, so if you want your numbers to be treated as numbers you will have to turn this option off; the default value is Off. Most database managers can read data in this default format; however, refer to your manual to be sure.

Before loading the index into your database, you will probably have to create an index data file. The field definitions will be: Title (maximum length 68), Author (maximum length 32), Magazine (maximum length 11), Issue (maximum length 12), Page (numeric), Article type (maximum length 17), Language (maximum length 14) and four lines of comments (maximum length 73 each). The last comment field is blank for each record, but we've included it to be consistent with future updates of the index.

Here's hoping that you've enjoyed Antic Publishing's first three years with the ST—and that there are many more to come! ■

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THREE YEARS...

way. It uses the High Sierra data format and plays audio disks as well. At about half the price of competing CD ROM decks (approximately $599), it will be difficult for other companies to compete. The machine is slated for release late in the second quarter of 1988.

The EST is another product ST users have been anxiously awaiting, and provides yet another opportunity for Atari to revolutionize the world of personal computing. At about the Mega price point, it will offer three additional screen resolutions, including a 1280-by-960 full-page, monochrome mode. The attendant ease-of-use in word processing and desktop publishing applications has the opportunity to tear the competition to shreds. Comparable performance from an IBM or Macintosh currently costs the user thousands of dollars more in additional hardware and software. Although a prototype of the machine has been up and running in Atari's R & D lab for awhile, a few of its custom parts initially gave Atari's suppliers some trouble. Development, however, is now in its final stages. (Editor's note: *For additional information on new Atari hardware, see "News, Notes and Quotes" elsewhere in this issue.*)

LAST WORDS

It's safe to say that Atari remains fully and emphatically committed to the ST line. There is a new consciousness at the company—and new employees and money to back it up—that recognizes today's personal computer market as an increasingly sophisticated one, and that users are no longer looking for hardware *per se*, but are looking instead for software solutions.

And Atari intends to install the ST and its children as the personal computer of choice to deliver those solutions. ■

If you'd like to see more articles like this, circle 171 on the Reader Service Card.

Jeffrey Daniels is a freelance writer who specializes in software documentation.

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David Stokes, ST Applications, Dec. 1986

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George Miller, COMPUTE!'s Atari ST Disk & Magazine, Oct. 1986

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J.B. Wikert, Learning C on the Atari ST

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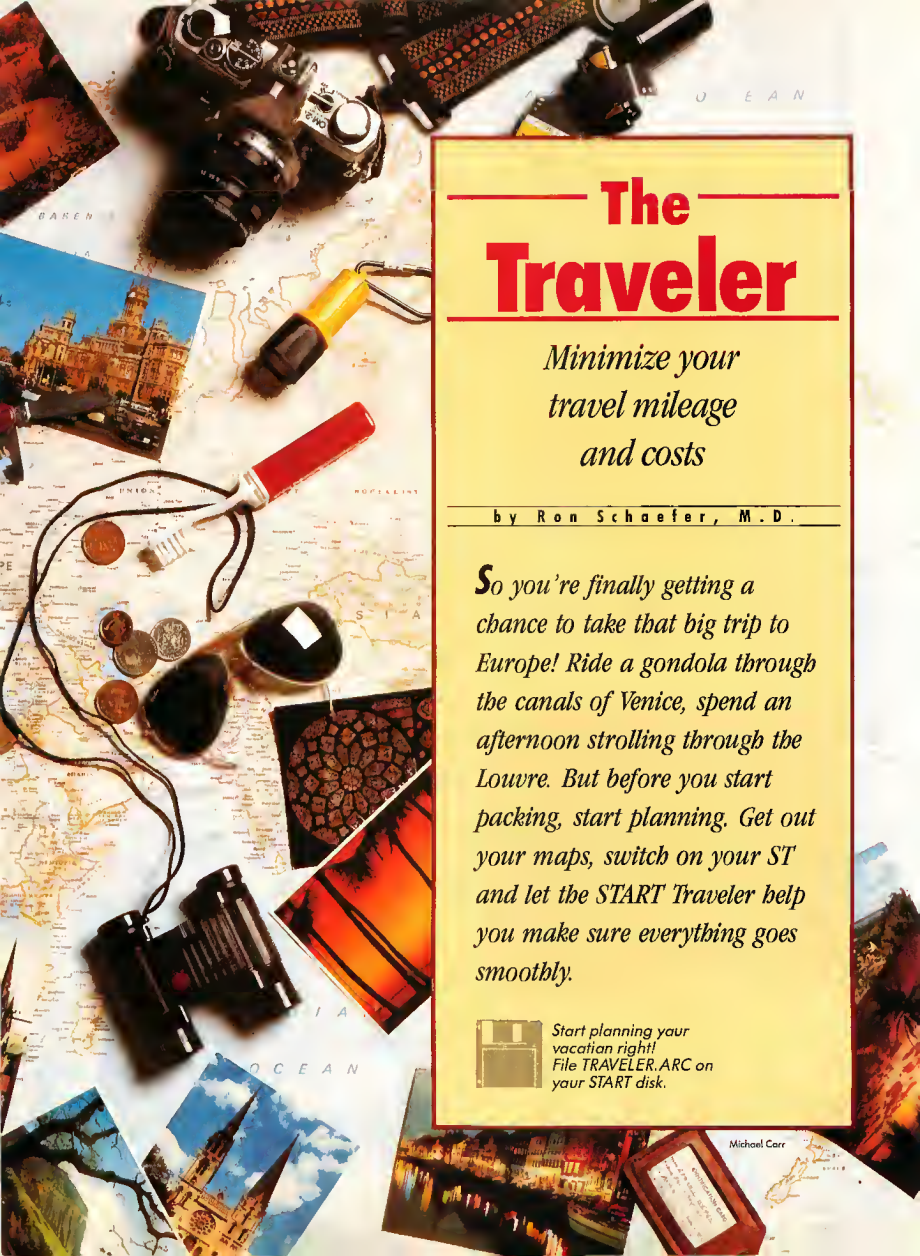


The Traveler

Minimize your travel mileage and costs

by Ron Schaefer, M.D.

So you're finally getting a chance to take that big trip to Europe! Ride a gondola through the canals of Venice, spend an afternoon strolling through the Louvre. But before you start packing, start planning. Get out your maps, switch on your ST and let the START Traveler help you make sure everything goes smoothly.

Start planning your vacation right! File TRAVELER.ARC on your START disk.

Michael Carr

THE TRAVELER . . .

In the November 1987 issue of Antic, Dr. Jeffrey Summers published "Your Best Route," an award-winning program for the 8-bit Atari. This program was so popular that START asked me to write a version for the ST. The Traveler is on your START disk, and the ST's superior graphics make it much more colorful than the original 8-bit version. Best of all, if you own Maps & Legends you can create overlay files of your trips and see how feasible your route really looks—no matter where in the world you are traveling!

The main function of the Traveler is to analyze the distances between a list of places, and to figure out the fastest way to travel between them. For example, suppose your family is planning a tour of Europe. Say, you land in any major city, and want to rent a car to visit Paris, Rome, Munich, Madrid and Amsterdam. The Traveler will show you the shortest route, so you can spend your vacation time wisely—and get the most out of your trip.

The Traveler, a new ST version of an old 8-bit favorite, will show you the shortest route for your summer—or anytime—travels.

The key function of the Traveler is to economize, no matter how far apart the locations or whether the distances between them are measured in mileage, city blocks or air fare. In fact, you can use the Traveler to solve problems you wouldn't even think of. The owner of a fresh fish delivery business could find out how to get the fish to ten markets around town before they spoil—using the minimum of mileage, cost and time. A student planning an interview trip for medical school could find the cheapest combination of flights to visit seven cities in ten days. The flexibility of this program will amaze you.

TRIP THE LIGHT FANTASTIC

The Traveler is on your START Disk in the archive file TRAVELER.ARC. Copy this file and the program ARCX.TTP to a fresh disk. Double-click on ARCX.TTP, and in the box that comes on the screen, type the filename TRAVELER.ARC and press the Return key. The disk will spin for a minute or so, and when it's finished you'll find the Traveler program and data files on the disk. The Traveler will run in medium or high resolution and was written and compiled with GFA BASIC. The Traveler uses some DEGAS format pictures that were generated by Maps & Legends. The pictures must be in the same directory as TRAVELER.PRG. In addition, two sample data files—TRAVEL.LAT and TRAVEL.MAP are included on your START disk.

To run the program, simply double-click on the TRAVELER.PRG icon. To get an idea of how the program works, load the file TRAVEL.MAP by clicking on Load Data under the DATA menu. Next, click on Plan Trip under the Options menu.

Type in the number corresponding to the place you would like to start your trip; enter 0 if it does not matter where you start. Next, enter the number of the place where you would like to end your trip; again, enter 0 if it does not matter where you finish. Now enter the numbers of the places you wish to visit. You can enter up to twenty places, but be prepared to leave your ST on overnight if you do. Five or six places will take only a few minutes.

Once the program has checked every possible permutation on visiting the selected places, it will print out the minimum total mileage and the path that you should take. If you are traveling between continental U.S. cities, a dialog box will ask you if you would like to see this data plotted out on a map of the continental United States. Finally, a dialog box will ask you if you want to generate an overlay file that can be read by the program Maps & Legends. If you do, click on Yes and then type in a filename using the extender .TXT. Refer to the Maps & Legends documentation on how to compile this text file into an overlay file.

CREATING DATA FILES

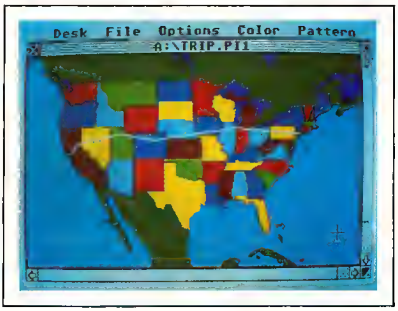
There are two ways you can generate mileage charts. The first is to enter the mileages between cities manually; the second is to have the computer figure out the mileages from the latitude and longitude of the locations. You can create data files by editing them with a word processor or text editor and saving them in ASCII format. If you do this, the first line in the file must contain the number of locations; there can be a maximum of 40 places in each file. Subsequent lines contain the information for the locations. First in each line is the name of the place, which must be eight characters in length or less. Following

each place name is the latitude in degrees and minutes and the longitude in degrees and minutes. (Note: Indicate longitude values east of the Prime Meridian and latitude values south of the equator by using negative numbers.) Each number is separated by a comma.

If you wish to have the computer figure out the mileage, save the file with the extender .LAT and load it into Traveler by clicking on Load Lat/Lon under the DATA menu. When a Lat/Lon file is read into memory the program calculates the distance between all of the different places using a great circle route which follows the curve of the earth. Keep in mind that the distances the computer gives will be less than the actual mileage it will take you to drive since roads tend to zig and zag a bit.

Use the Traveler with Mops & Legends to create colorful maps of your trips: anywhere in the world!

If you wish to enter the mileage, separate the number of miles from the longitude with a comma. These numbers can be obtained from driving road atlases; alternately, they can be air fare or bus fare. If a dollar amount is used rather than a mileage then the trip will be optimized in terms of money instead of miles. (If you are entering the mileage manually, it is not very important that you enter the correct latitude and longitude; if you don't know these numbers, enter zeros instead. In fact, the only reason you would need these coordinates is if you wish to see your route on a map of the United States or create an overlay file for Maps & Legends.) Save the data file with the extender .MAP and load it into Traveler by clicking on Load Data under the DATA menu.



Summer trip from San Francisco to New York via Reno, Salt Lake, Denver and Chicago. The Traveler planned the route; Maps and Legends makes it easy to put it on a colorful map of the U.S.

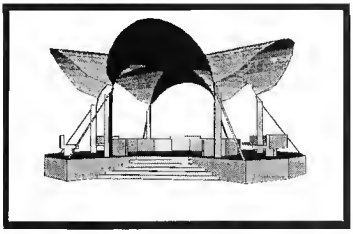
CREATING A DATA TABLE

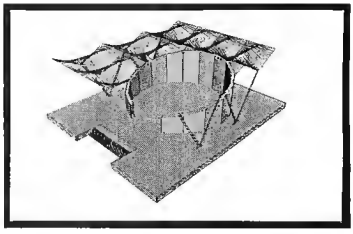
If you prefer, you can create a data table from inside the program. Click on Create Data under the DATA menu. Click on the second-from-the-top slot on the left hand column. At the bottom of the screen you will be prompted for the place name; remember that this should be eight characters or less. Now you will be prompted for the latitude and longitude in degrees and minutes. As places are entered the matrix will be filled with zeros. To have the computer figure out the mileage, exit the editor by clicking the right mouse button and save this file using the Save Data option. Use the extender .LAT. Now reload the file using the Load Lat/Lon option and the program will fill the matrix with the distances between the places.

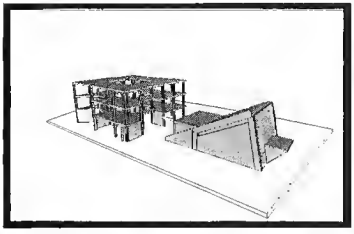
To manually edit the number of miles between two places, click on the point intersected by those places and, at the prompt, enter the mileage. At the bottom right of the screen is a series of boxes with arrows and a size box. If you click on one of the arrows the data matrix is shifted one field in that direction. If you click on the middle box the matrix will shift back and forth from the beginning to the end of the data matrix. To speed data entry there is an inverse option at the bottom right of the screen. When Inverse is ON the program will automatically enter the inverse or reciprocal of the mileage you enter. For instance, the distance from Miami to New York is usually the same as the distance from New York to Miami. This option can be turned off by clicking on the light text OFF and turned on again by clicking on the text ON. Save the mileage file with the Save Data option under the DATA menu using the extender .MAP.

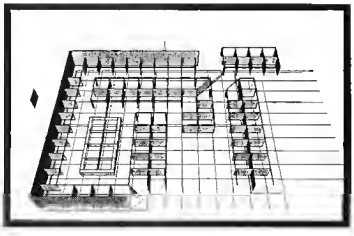
AROUND THE WORLD

You can use the Traveler to directly calculate the distance between two points. Simply click on Calculate under the OPTIONS menu and enter the latitudes and longitudes of the two points in degrees and minutes. This routine uses a series of trigonometric equations to calculate the great circle route, the shortest possible distance between any two places on earth.









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THE TRAVELER . . .

HOW IT WORKS

The Traveler uses a brute force method to find the shortest route; all possible combinations are checked and the minimum number is found. For instance if you entered the three places A, B and C there are six possibilities: ABC, ACB, BAC, BCA, CAB and CBA. The number of possibilities is equal to the factorial of the number of places. For three places it is 3 factorial (or 3 x 2 x 1 = 6). Factorials grow pretty fast, so when you select lots of places to visit it can take the computer quite some time to figure it out. For instance for 20 different places more than 2,400,000,000,000,000,000 different routes are computed. If you wish to study the source code, you can read it into GFA BASIC by clicking on Merge and then the filename TRAVELER.LST

Economize your trip by money, mileoge ond time.

Alternately, double-click on TRAVELER.LST from the desktop to either show the file on the screen or print it out.

WORLD TRAVELER

With the Traveler, you'll soon be finding the best ways to use your vacation money and time. You might even find you can squeeze one more city into your itinerary. After all, when you've got a computer, who needs AAA? ■

If you'd like to see more articles like this, circle 201 on the Reader Service Card.

Dr. Ron Schaefer's work has appeared in the ST Resource section of Antic. He is also the author of the ST programs Code-Blue and Diet.

PRODUCTS MENTIONED

- Maps & Legends–The Cartographer, $34.95, The Catalog, 544 Second St., San Francisco, CA 94107, (800) 234-701.

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MICROSOFT WRITE

Was It Worth the Wait?

By Ian Chadwick

When Microsoft released Word 1.0 for the Macintosh in 1984, the program received a lukewarm reception: it offered little to convince users to switch over from the bundled MacWrite program. Years later, Microsoft Word 3.3 has become a superb writing tool. Microsoft Write for the ST is a close translation of the original Word 1.0 and, unfortunately, it offers as little to ST users as it did to Mac users way back when.

THE GOOD POINTS. . .

First, let's talk about Write's good points. It lets you control paragraph formatting (including tab positions and indents) at any point in your document, and has an excellent mail merge feature with conditional commands (IF, ENDIF). It also has a feature unique to ST word processors: its glossary, which allows you to replace a single word in your document with text of any length, such as a paragraph, name and address or technical reference.

Write allows nested paragraphs in which you can indent each subsequent paragraph from the previous one. It won't, however, automatically number them for you. Write also allows you to work in several different units of type measurement: inches, centimeters, 10- or 12-pitch and points. Footnotes can be any length and are easy to add or delete, but the footnote window consumes one of the four available GEM windows, reducing the number of text screens you can display. This may be a moot point, since I've never seen anyone *need* four simultaneous document windows.

Write's online help screens are a significant aid: their form and presentation should be seriously studied by other ST developers. Each help screen doesn't just list the commands, it actually explains how to use the program in easily understood language.

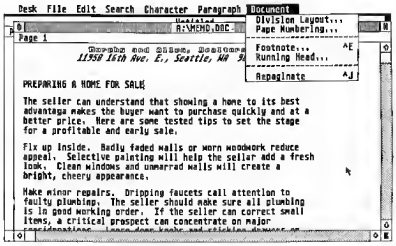
Possibly the nicest touch in Write is the simplest: when you block a portion of text for replacement and start typing, the blocked text is immediately deleted and the new characters inserted where the block once was.

THE NOT-SO-GOOD POINTS

Now it's time for the omissions. Despite its price, Write has no spell-checker, no index or table of contents generation, no line or paragraph numbering, no macros, no thesaurus. You can't merge one document into another from disk. You *can* set a page size by measurement but there are no simple selections for standard paper sizes—you must enter the actual dimensions. There are no utilities to convert to or from other word processor formats directly, although you can load and save straight ASCII files. Also, Write can't integrate graphics into text.

Although Write makes full use of GDOS and GEM fonts, this is a mixed blessing: most fonts are printed as graphics,

Microsoft Write's main editing screen.



considerably slowing down your print time. With a laser printer they're fine; with dot-matrix, they're at best mediocre. Since Write cannot incorporate graphics into the text, its ability to mix fonts is of limited use anyway.

WHAT'S ONSCREEN

Write handles fonts and type characteristics such as bold, subscript and italics well. However, the screen characters appear too large for their specified size: a 20 point font displays as ¾ of an inch on a color monitor, which is about 54 point and ⅜ of an inch on a monochrome monitor, or about 27 point. Since it also can't show columns or display footnotes, endnotes, headers or footers within your text where they will eventually be printed, you could call Write a "semi-WYSIWYG" program.

Although Write supports a number of different units of type measurement, it doesn't support measurement by characters or columns (as in an 80-column screen). This makes for an uneasy transition from the more common character-oriented word processors. It also means that you can't use it to fill in pre-designed forms without first re-doing the layouts. Write also does not display the line and column position of the cursor.

You can search for and replace several "special" characters, including a carriage return/line feed combination. However, although you can *type* characters from the extended character set into a document, you can't use the search or replace functions on them, making the effort half-hearted at best.

Write allows you to number pages in numeric and upper or lowercase Roman or Alpha characters, but you can't easily position the page number—say, flush right or centered. You need to specify the exact location: for example, 0.75 inches from the top of the page and 7.25 inches from the left side. This requires experimentation to make sure you end up with the correct position. The same positioning problems occur with headers and footers.

The Division Layout command will probably cause you the most headaches, since you can't see its effects until print time. Division Layout controls the location of headers, footers, footnotes, and columns as well as how division breaks (where page layouts change) occur. Again, experimentation is necessary to understand how it works.

MICROSOFT WRITE'S MAC PARENTAGE

Write shows a strong Macintosh influence—mostly to its detriment. For example, Write's included GDOS fonts are named according to Mac convention rather than accepted typeface terminology: Swiss (sans serif proportional, like Helvetica), Dutch (serif proportional, like Times Roman) and Typewriter (your basic dot-matrix fixed-size font). As is typical for programs using GDOS output, separate printer and screen fonts must be installed for each desired point size.

Another example of slavish dedication to the Mac standard is Write's use of the left mouse button exclusively. The right button is ignored—a waste of a useful resource.

BACK TO ATARI

Atari furnishes GDOS 1.1 with Write, for what it's worth. It has an awkward installation program that automatically sets up your system for the Atari SMM804 dot matrix printer and then returns to the Desktop. If you use another printer, you have to reload the program and alter the setup. Separate disks for the Epson FX-80 and Star Micronics NB-15 (Epson 24-pin compatible) printers are also included.

The included GDOS manual is unclear and the dialog

An example of Microsoft Write's different fonts.

boxes in the installation program have typos in them. You can probably figure out the adjustments required, however, merely by applying some common sense to the process. Since few ST programs currently use the GEM metafile, you can save memory by removing its fonts and driver. Later on, you can include it if you need to. Write works without GDOS, but then it allows access only to the system font.

DOCUMENTATION

Write's documentation comes in a nice slip-cased manual. It's generally clear and comprehensive about the basics, but advanced features like the glossary and divisions are not as well explained as they should be. More examples would be welcome.

The manual also *doesn't* describe how to build a printer driver. If you don't own an Atari- or Epson-compatible printer, you're out of luck. The GDOS manual suggests you contact your local dealer or Atari Customer Support, but provides only the addresses for the U.S. and U.K. offices (not Canada), and there are no phone numbers given. At least WordPerfect has a toll-free 800 number for customer assistance.

CONCLUSION

After working with Microsoft Write for a month, I was left ▶

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dissatisfied. Write might have fared better had it been the *original* word processor bundled with the ST (instead of 1st Word) or even if it had been released in 1986 when Atari first acquired it. But as the most recent arrival in a competitive market, it has little new to offer to the ST user.

Microsoft Write is only the second program for the ST from a major MS-DOS publisher—the first was WordPerfect from WordPerfect Corp. (Editor's note: *See Ian Chadwick's review of WordPerfect in START Special Issue 3, May 1988.*) Although Write originated with Microsoft, Atari is now marketing the program.

Write has been in the works for a long time. Demo versions appeared as early as September 1986 at the San Jose, California, Atari Fest. One version even included the original Mac help screens! The final release version is copyrighted by Atari as 1986 and dated August 1987, but the product wasn't shipped until February 1988.

Despite its lengthy gestation, Write is a disappointment. It has fewer bugs than WordPerfect, but mostly because it has fewer features. It also takes a non-standard approach to both word processing and the ST, the latter probably due to its Macintosh ancestry. Unofficial but reliable word from Atari sources is that Write will *not* be updated or enhanced. For better or worse, what we have now is the final version.

To put Write into perspective, it is basically a decent GEM-based word processor, but at a price that puts it above most of its competitors. Its most direct competitor is Timeworks' WordWriter ST, which lists for $50 less and includes a spell-checker and thesaurus. Write has some features of WordPerfect, yet is missing most of those that would make it a true competitor. Write allows the use of GDOS fonts, which suggests an attempt at a desktop publishing program, but does not allow the integration of graphics with text. Write is neither fish nor fowl and this ambivalence shows.

Write's list price of $129.95 is much too high for what Write offers. As the street price settles to around $80-$90, it may be worth considering if you need its particular combination of features. For the former Mac owner who has moved over to the ST world, Microsoft Write will be a bit of unwelcome nostalgia. For the rest of us, it's the software disappointment of the year. ■

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***Ian Chadwick is a free-lance writer and author of the classic Atari 8-bit reference book* Mapping The Atari.**

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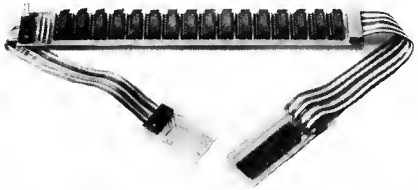

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by John H. Jenkins

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Dan Hubig

Consider the following situation: You are writing the Great American Novel with your favorite word processor and you want to switch to italics at a particularly dramatic moment—only you can't remember the exact command. You grab the manual off the shelf, turn to the index, flip through the manual, find the command—and have long since forgotten what it was you were about to write.

There are numerous situations when you need to have information at your fingertips. Atari recognized as much; that's why there's a Help key on your ST keyboard. The problem is that not all programs provide online help. Many give you only a few cryptic hints in the manual, which are often hard to find and even harder to understand. Some don't even have real manuals. Others include summaries of the most important commands in "quick reference sheets" which are always getting dog-eared and lost. Even if there is on-line help provided, it may not include the information you want, and so you have to go scrambling for the manual again.

Wouldn't it be wonderful to be able to create and customize your own help files? In fact, it would also be wonderful to have a way of being able to call up, from within any program, any useful information you may need to go on with what you're doing—ZIP codes or frequently-used addresses, perhaps, or an ASCII chart and list of AES and VDI functions. Igor, a program on this month's START disk, lets you to do exactly that.

USING IGOR

Igor is in the archive file IGOR.ARC. Copy this file and the program ARCX.TTP to a fresh disk. Double-click on ARCX.TTP and type the filename ▸

IGOR.ARC in the box that comes on the screen and press the Return key. Your drive LEDs will flash, the drive will whir, and after a few moments you'll find Igor and its associated files on disk.

Since Igor is a desk accessory, you have to reboot your ST by pressing the Reset button or turning it off and on again in order to use it. When the Desktop returns, you can start to use Igor by clicking on the Igor line in the Desk menu. And because it's a desk accessory, it can only be used with programs that use GEM—by and large, these are the ones that have menu bars.

Igor's commands and help files all appear inside of a window. When you first start Igor, this window will contain a list of topics available from the current help file. Click on the name of the topic you're interested in, and the window will fill with the information on that topic.

You can use the scroll bar if there is too much information to fit in one window; you can also scroll through the window using the cursor control keys. Home returns you to the top of the window, the arrow keys move you one line or one column at a time, and holding down shift with the up or down arrow keys moves you one full screen at a time.

When you're looking at the information on any topic, you can always get back to the list of topics by clicking on the word "TOPIC" in the top line of the window, or by pressing Alternate-T. The most recent topics visited are listed on the top line; to go back to a topic, simply click on its name.

In fact, changing topics is even easier than that. If the name of a topic appears anywhere within the Igor window, clicking on it will automatically call that topic up. To try this, call up the General topic in the sample file by clicking on its name, and then click on the words *Igor text effects* in the help file text. Igor will instantly switch to that topic.

If a topic gets too long, you can break it up into pieces to create sub-topics. The sample help file on your START disk contains the topic ST Writer Elite Commands. This topic contains only sub-topics such as Cursor Movement, Paragraphs and Blocks, and Search and Replace. Each of these names act like Igor "buttons" which will quickly take you to the individual topics.

Figure 1.

IGOR TEXT EFFECTS

Tilde-E (Effects)

00 Normal	01 Boldface
02 Light	04 Italics
08 Underlined	16 Outlined
32 Shadowed (not always available)	

Add codes to combine effects, e.g., 01+04+08=13 gives you bold, italic and underlined text.

Tilde-C (color)

00 White	08 Light white
01 Black	09 Light black
02 Red	10 Light red
03 Green	11 Light green
04 Blue	12 Light blue
05 Cyan	13 Light cyan
06 Yellow	14 Light yellow
07 Magenta	15 Light magenta

You can change these colors using the control panel; how many colors you can use will depend on the screen resolution.

Tilde-S (size)—Changes the size of your text. Text size is measured in points, that is, the number of dots in a character vertically. On a color monitor, for example, ordinary text has a size of 09. On a monochrome monitor, the normal size is 15. You can make the text size larger or smaller, but since it's hard to tell in advance exactly what the different sizes look like, you may have to experiment with the size to get the effect you want.

Tilde-F (font)—Sets the font to a system-defined GDOS font. Remember that if you want to use fonts, first install GDOS, and then have the third line of IGOR.DAT start with the letter Y.

If GDOS is not installed or you do not want to use fonts, font commands will be ignored.

Tilde-N (normal)—Turns things back to:

Font #1 (system font)
Size #9 (color)/size #15 (monochrome)
Color #1 (black)
Effects #0 (normal text)

Igor automatically ends all effects at the end of each line.

DOING SEARCHES

If you've forgotten exactly where the information you want is within your help file, you can search for a word by clicking on SEARCH at the top line of the window or by pressing Alternate-S. Type in the word to search for, and then click on Yes or No to tell Igor whether or not to distinguish upper and lower cases. You can include wildcards (? and *) in the search string. These will match any string. For example, ?gor and 1*r will both match Igor. Next, set the direction of the search to be the first occurrence of the word, the last occurrence, the next occurrence or the previous occurrence. Click on Cancel to exit without searching. Repeat the search by clicking on SEARCH again; the same word will still be in the dialog box. (Note: if the file IGOR.RSC is not in the root directory of the boot disk with IGOR.ACC, you will not be able to do searches.)

Igor loads the help file it consults entirely into RAM. This means that you can take the disk with the help file on it out of the disk drive, without worrying about losing information, and it also means that changing topics and doing searches are lightning fast.

To load a new help file, click on LOAD in the top line while you're looking at the list of topics, or press Alternate-L.

SETTING UP HELP FILES

Creating your own help file is easy. All you need is a text editor or word processor that can create ASCII files. To enter the information on a topic, start a line with the word TOPIC (all uppercase) and then follow it with a space and the name of the topic. Starting on the next line, type the information you want included the way you want it to appear on the screen. You can use characters like "|" and "—" to create boxes, if you like, containing the names of related topics. The only limitation is that no line can be more than 64 characters long.

When you're through creating the help information for one topic, start a new topic by going to the next line, typing TOPIC, a space, and the name of the new topic. Igor will put your topics in alphabetical order when it loads the help file. Save your file with the extension .HLP.

You can include as many topics as you like—the only limitation is how much memory Igor has at its command. As a rough estimate of how much room a help file requires in RAM, multiply the size of your file by 2. If Igor does run out of memory when loading a help file, you'll find that not all of your help file is there.

SETTING DEFAULTS

Igor uses the data file IGOR.DAT to store default values. To create this file, double- click on the program IGORDATA.PRG. Using the file selector, click on the name of the file you wish Igor to load at boot time. IGORDATA will remember the drive and path name, so make sure the drive with the help file is in the directory it will normally be in at boot time. Next, type in the amount of RAM (in kilobytes) you want to reserve for help files. If you have selected a file which is already on disk, Igor will figure out how much memory that file needs; otherwise, the default is 32K. You may want to type in a larger number if you plan to load a larger help file later. Click on whether you wish to use GDOS (if it is installed) to add flourishing fonts to your text files. Finally, click on the filename IGOR.DAT to store the data file. Make sure this will be in the root directory of your boot disk with IGOR.ACC.

If you wish to edit the IGOR.DAT file directly, the first line must contain the name of the default help file; the second line contains the amount of memory to reserve (if this line is missing, Igor will reserve 32K). If the third line begins with a Y, GDOS will be used if it is installed. Save the file in ASCII format.

SPECIAL EFFECTS

You can add pizzazz to your help files by adding special effects like bold and italics, different colors and larger sizes. If you use GDOS, you can even have access to special fonts such as Dutch or Swiss.

To indicate a special effect in your help file, precede the word or phrase you wish to emphasize with a tilde (~). If Igor sees this character, it will assume it is part of a code, so don't use this character otherwise. Follow the tilde with a letter indicating the code and then the number of the particular attribute. The codes and attributes are listed in *Figure 1*. Note that attributes must be two digits long. If you wish to use different fonts, you must have GDOS, which is available with programs such as DEGAS Elite and Microsoft Write. Remember to indicate that you wish to use GDOS in the IGOR.DAT file. Keep in mind that if do you use GDOS, Igor will need more memory than it does without it, and your boot disk must remain in the disk drive so that Igor can find the fonts when it needs them.

A sample help file called SAMPLE.HLP is included on your START disk, along with a sample IGOR.DAT. There's also a little file called IGOR.TXT. This contains a macro for use with STARTKey, the designer keyboard program from the Winter 1987 START. Include this macro in any macro file you use with STARTKey, and Igor will be invoked whenever you press the Help key! The Megamax C source code for Igor is also on your START disk, so you can see how the program works and modify it as you see fit, as is the .RSD file needed by K-Resource to edit the resource file.

At long last, put that Help key to good use. Create help files and tailor them to your own needs, making your programs easier to use. Who knows? Maybe you'll be able to throw those quick reference sheets out altogether. ■

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John H. Jenkins made a splash with the ST world when he published STARTKey in the Winter 1987 issue of START.

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The Ultimate ST Spreadsheet?

By Jim Pierson-Perry

Welcome to START's new column about running Macintosh and IBM PC programs on your Atari ST computer! In the months to come, we'll explore ways of using Mac and PC emulators such as Magic Sac and pc-ditto to do things not yet possible with ST software, as well as ways to capitalize on using your ST with other computers. (Of course, in order to run the programs we'll discuss, you'll need Magic Sac for Macintosh applications and pc-ditto for IBM programs.)

By way of background, I use a 1040 ST at home and a Mac SE at work, while my secretary and many co-workers use IBM PCs. Much of my work involves writing reports (often with several co-authors), preparing presentations and analyzing information (technical, budgetary and inventory). I found that using my ST as a middleman makes it quite simple to coordinate this three-ring circus. As a side benefit, I can get out of the office early and do my work at home under more congenial surroundings.

BEYOND THE ST

Why use a Mac or PC emulator on your ST? There are two main reasons: *connectivity* and *software*.

In an ideal world, you could use any computer you like, and directly exchange files and data with people using other computers. Unfortunately, in the real world incompatible disk formats and computer hardware make that difficult.

Connectivity means working around these obstacles. Many companies have resorted to expensive hardware solutions to keep the information flowing. The ST turns out to be ideally suited at this task for two reasons. First, it has the same disk format as IBM PCs, so you can use the same disk files on both kinds of computers. For example, you can create a file on your ST with VIP Professional and then use it on an IBM with Lotus 1-2-3—or use WordPerfect to write a text file on either machine. Second, the ST can directly run Mac software—even from the original disk (with Magic Sac and the Translator One disk controller). No other non-Apple computer can make that claim. That makes the ST a perfect low-cost interpreter between Mac and PC computers.

We'll explore ways to do things not yet possible with ST software.

Of course, the reason most people buy Magic Sac or pc-ditto is to tap into the huge existing Mac and IBM software libraries. These computers have been available longer and have more users than the ST, so there are many good programs for them that are into their second or third generation. These programs often have more features and more sophistication than their ST counterparts—and some offer uses that just aren't available yet for the ST.

A WINDOW ON SPREADSHEETS

A spreadsheet program may be the most important application for most computer users. What are the advantages of using a PC or Mac spreadsheet on the ST?

The current state of the art is easily defined. On the IBM side is Lotus 1-2-3, the most widely sold program for any microcomputer. Macintosh users have Excel, the most powerful spreadsheet currently available for any microcomputer. In a feature-by-feature comparison against Lotus 1-2-3, Excel wins hands down—but Lotus has the advantage of a vast selection of templates, guides and training courses. Lotus 1-2-3 is the best second-generation spreadsheet; Excel, with its multiple linked spreadsheets and ease of use, is at the front of the third generation in spreadsheet design.

Unfortunately, almost all Mac and PC programs are more expensive than those for the ST. Excel will set you back $395, significantly more than comparable ST spreadsheets, which are typically less than $150. (Of course, you could always pay for Excel out of your savings from buying an ST and Magic Sac instead of an overpriced Macintosh!) Lotus 1-2-3 is no slouch either, coming in at $495.

What about the ST? There are several spreadsheets for home or small-scale work, but only two qualify for power use: VIP Professional and Logistix. VIP

Professional is a Lotus work-alike that uses GEM; it can both read and write Lotus 1-2-3 data files. Logistix is similar to VIP but without GEM, and it's more complicated to use for graphics activities. It can read both Lotus 1-2-3 and dBase data files from IBM disks but cannot write using either format. Both VIP and Logistix are adequate for most needs, but both require trade-offs between features and ease-of-use, and neither takes full advantage of the ST's capabilities.

THE ULTIMATE SPREADSHEET?

If you want the best, you need Excel—running with Magic Sac. This has all the features, power and speed you could ask for, along with one of the best user interfaces ever designed. Forget that it was written for the Mac; the mouse-driven interface works superbly on the ST. With an ST monochrome monitor, it even shows a larger spreadsheet view than when running on a Mac—and it's much easier on the eyes.

Several things are apparent when you start to use Excel. First, it is extremely fast. Excel uses "minimum recalc": when a value is entered or changed, Excel only re-evaluates cells directly affected by the change. By contrast, Lotus 1-2-3 recalculates the entire spreadsheet with each change. Another feature is the extremely large available memory: over 40,000 cells can be used with a 1040 ST configured as an 832K Mac under Magic Sac.

The mouse is used in an extremely intuitive manner. For example, to change column width, just click on the boundary and put it to the side. The column widens, in real time, until you stop. Cells are selected by pointing and clicking, or dragging a box to encompass a larger range. All commands are available through the command menu with a Help key close at hand. You can open multiple windows simultaneously to view different portions of the spreadsheet, various graphs or several spreadsheets.

Excel's advanced features include the ability to link several spreadsheets, automatically create macros by recording your keyboard operations, new statistical functions, manipulate arrays of data, and an Undo key (hooray!). Tired of being able to create only one graph at a time, and having to use a separate program to have it printed? You can create as many graphs as you like with Excel, and immediately print or save them.

Lotus 1-2-3 is the most widely used spreadsheet, but Excel is the best.

Using the Magic Sac printer driver, an Epson-compatible printer can substitute for the usual Apple Imagewriter. Excel output can be printed in normal or reduced size, sideways and with a full battery of print style enhancements. Alternatively, you can save output to a disk file as text. You can also use the Mac clipboard to select a particular region of the spreadsheet or a graph for use with another Mac program.

THE SPREADSHEET SHUFFLE

I use Excel extensively at work and home, but many of my co-workers are firmly wedded to Lotus 1-2-3. Here is where my ST has really proven its value as an interpreter. I get the Lotus 1-2-3 data files on a standard IBM 3½-inch disk and convert them to Magic format, using the Mover program that's supplied with Magic Sac. Next I can either analyze the files at home, or copy them to a Mac-formatted disk using the Translator One and take them back to work. The data files themselves do not need conversion, since Excel can both read and write in Lotus 1-2-3 format.

The reverse process is just as simple. I use Excel to produce a file in Lotus 1-2-3 format on a Mac or Magic disk. Then I convert it to an ST/IBM disk and hand it over to the IBM crowd.

If you don't have the Translator One disk controller, another way to move files between computers is through the serial ports, using the software that comes with Magic Sac. If your ST and Mac aren't near each other, you can do it by modem using a Macintosh terminal program. Make sure you use one that runs under Magic Sac; Freeterm and Red Ryder (version 7.0, not later versions) work well. A modem is also a good way to get Lotus templates and macros; you can get them from the Lotus forum on CompuServe, as well as many other BBSs.

THE ST CONNECTION

Don't forget that the ST isn't just limited to ferrying files between IBM and Mac programs. For example, graphs can be saved in MacPaint format and converted for use with DEGAS Elite. There you can add color and other enhancements, then use them with programs such as Publishing Partner. You can also use Excel text files with ST word processors (yes, including ST Writer), although specialized style and formatting information is lost. ■

If you'd like to see more articles like this, circle 185 on the Reader Service Card.

Jim Pearson-Perry is a research chemist and semiprofessional musician who lives in Elkton, Maryland. *continued on page 49*

The reviews are in . . .

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Discovering Floppy Disks

By Frank Hayes, START Senior Editor

A floppy disk is the way most information gets into and out of your ST. It's so important that every ST sold today comes with a floppy drive built in. But getting the most out of your disk drives may not be as easy as you think. Let's look at the differences between disk drives and disk formats, and discuss what to do if your disk goes bad.

SINGLE OR DOUBLE?

The ST uses 3½-inch floppy disks, and Atari makes both single- and double-sided floppy drives for the ST. A single-sided drive (like the one built into the 520 STFMs) only uses one side of a floppy disk, and normally holds about 360K. A more expensive double-sided drive (contained in the 1040 ST's or Mega's, for example) uses both sides of the disk, and normally can hold around 720K. However, it can also use single-sided disks.

The two different kinds of drives can occasionally pose a problem—if you've got a 520 ST, your built-in drive is single-sided, so you can't use the double-sided disks your friends use on their 1040 STs. How can you add a double-sided ST drive? Easy—just plug it in.

A SECOND DRIVE

An ST external floppy drive usually looks something like the Atari SF314 drive in *Figure 1*. It comes with a cable that connects it to your computer, and a power supply for the drive.

Hooking it up is easy. First, connect the power supply to the disk drive and plug it in. Next, with all the power turned off to both the ST and the disk drive, plug the connection cable into the ST's disk drive port—it's marked with a floppy icon, like the one in *Figure 2*. Then plug the other end of the cable into the port labeled In on the back of the disk drive. Turn on the disk drive and the computer, and you've got a second drive!

Figure 1: An Atari SF314 disk drive.

You can use a maximum of two floppy drives with an ST, so if your ST has a built-in disk drive, you can connect only one external drive. But if you have an older model 520 without an internal drive, don't worry—you can still use two disk drives. Connect the computer's floppy disk port to the first drive's In port. Then connect the first drive's Out port to the second drive's In port (see *Figure 3*).

Once you've connected a second drive to your ST, you'll no longer have to repeatedly swap disks when you want to copy a file from Disk A to Disk B—just drag the files, and your ST does the rest. It's a big improvement, and worth the additional cost.

How much additional cost? Atari's single-sided SF354 has a list price of $199.95, while the double-sided SF314 is $299.95. You can also get external ST drives made by other companies, such as C-Systems, IB Computers and Paradox Industries.

NON-STANDARD DISK DRIVES

There are also non-standard floppy disk drives available for the ST. For example, you can get a 5¼-inch disk drive that will let you use IBM PC-compatible floppy disks with your ST; handy if you're exchanging data between your ST and a PC. An ST-compatible 5¼-inch drive usually connects just like an external 3½-inch drive; just follow the instructions that come with the drive.

FORMATTING A DISK

Before you use a fresh floppy disk, you'll have to format it. Formatting prepares a disk for use by putting special magnetic guidelines on it, which the ST will look for when you load or save a program or file.

To format a disk from the Desktop, first put the disk you want to format in one of your floppy drives. Formatting will *completely erase* the disk, so be sure there's nothing on it you want to save! Single-click on the appropriate drive icon to highlight it, then move up to the File menu and click on Format.

From the dialog box that appears, you can select how many sides to for- ▶

mat, as well as a name for your disk. (Note: you can choose either single-sided or double-sided format if you have a double-sided drive; you'll get an error message if you try to format a double-sided disk on a single-sided drive.) You can also give your disk a name up to 11 letters long by typing the

Figure 2: The floppy disk icon on the back of your ST.

name into the Disk Label line. Next, click on Format to format the disk, or Cancel to return to the Desktop.

When the formatting is done, you'll see how many bytes are available on the disk. For a single-sided disk, it should be 357376; for a double-sided disk, 726016. If a smaller number of bytes appear, the disk may not have formatted correctly—and you may have a bad disk.

SPECIAL FORMATS

Special formatting programs are available for the ST, some of which will allow you to get even more information on a disk. One such program, Twister, originally appeared in START's Spring 1987 issue; another one, Format11, is available from many online services and user groups. (A new version of Twister appears on this issue's START Disk. See the "Small Tools" column in this issue!)

These programs work by storing information on disks differently from the standard ST format. Ordinarily, your ST stores data in the form of 80 concentric rings (called *tracks*), each of which contains 9 chunks of data (called *sectors*). Special formatting programs use either more tracks (up to 82) or more sectors on each track (up to 11). Some special formatting programs also rearrange the sectors to let your disk drives read and write files faster, but be careful—some STs may have trouble reading specially formatted disks.

TIPS FOR LIVING WITH FLOPPIES

- Don't overload your disks. As a disk gets full, running out of room when you're trying to save a file becomes much more likely. And if a disk goes bad, you stand to lose everything on it. Don't press your luck—when one disk begins to fill up, start a new one.
- If you've saved and deleted many files to and from a disk, the files are likely to become more and more fragmented. As a result, even though you can keep just as much information on the disk, it will take longer and longer to load and (especially) save files. Solution? Copy the files to a freshly formatted disk, and reformat the old disk. (You want to copy just the files, so either highlight the old files and drag them to a new disk, or highlight the old disk's icon and drag it to the new disk's window.) Another suggestion is to use MichTron's Tune-Up program, which will arrange your files sequentially on disk automatically.
- When you're copying files from one disk to another, or to a disk or folder icon, be careful not to drag them to the same disk. On most 520 and 1040 STs, that will destroy the files you're trying to copy! (Atari has fixed this problem in the Megas.)
- When you're emptying a disk, don't just erase the files. It's better to actually reformat the disk. That redraws those magnetic guidelines, and verifies that the disk hasn't been damaged or gone bad since you originally formatted it.
- Buy disks designed to work with your ST's drive. Almost all 3½-inch disks are rated for double-density, or 360K per side. But some disks are rated as single-sided, and are typically less expensive than double-sided disks. Since both kinds of disks will work with a double-sided disk drive if they're formatted as double, why spend the extra money for double-sided disks? Answer: A disk is only rated as single-sided if it's *already* failed the manufacturer's tests for double-sided operation. Play it safe and spend the few extra dollars for fully rated disks.
- And—most important—*never* use disks that won't format successfully. If a disk won't format on the first try, it may just be a glitch. But if it fails a second time, throw it away! You've

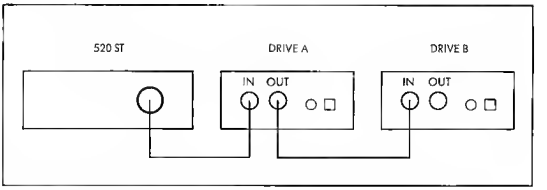

Figure 3: Two floppy drives chained together. The coble from the first drive's Out port connects to the second drive's In port.

got a bad disk—and it's almost sure to fail when you can least afford it.

CATASTROPHE!

What do you do if you boot up your ST and when you open the disk's window, there's nothing but random garbage where the filenames should be?

Don't panic. First, turn everything off: computer, disk drives and monitor, wait a minute, then turn everything back on and reboot. If the problem was caused by power surges or static electricity, rebooting might clear it up.

Once you've used a second drive, you'll never want to have just one drive again.

If there's still garbage on your disk, boot with a different disk, with the write-protect tab open (protected). If the disks that worked yesterday don't work today, it's probably a problem with your disk drive or computer. If all your disks still work fine except one, that one's probably gone bad. (Another way of testing whether a disk has gone bad is to try it on another ST.)

If you have a bad disk, you're now in the realm of ifs and maybes—but you may still be able to save your data. Try formatting a new disk and copying the entire contents of the bad disk to the newly formatted disk. Even though you can't use the old disk, you may be able to use the new one.

That didn't work? Then look for a friend who's experienced at recovering crashed disks. (Work on the copy, *never* the original!) Programs like Disk Doctor will let you repair a disk's directory and reconstruct mangled files. Take your time, and experiment on copies of the bad disk.

Preventive medicine is always better than trying to find a cure, so *back up your disks!* Then just make copies of the backup and throw the crashed disk away. It's the cheapest insurance you can have against a catastrophe.

Take good care of your disk data and your drives, and they'll help you get the most out of your ST. ■

If you'd like to see more articles like this, circle 250 on the Reader Service Card.

PRODUCTS MENTIONED

- **C-Systems DF1000**, $249; **DF2000 (dual double-sided drive)**, $379. C-Systems, P.O. Box 333, West Jordan, UT 84084, (801) 350-8855.
  CIRCLE 251 ON READER SERVICE CARD
- **Disk Doctor**, $19.95. The Catalog, 544 Second Street, San Francisco, CA 94107, (800) 234-7001.
- **IB Drive**, $249.95. IB Computers, 1519 SW Marlow Avenue, Portland, OR 97225, (503) 297-8425.
  CIRCLE 252 ON READER SERVICE CARD
- **Indus GTS100**, $199. Future Software Systems, 21125 Chatsworth Street, Chatsworth, CA 91311, (818) 341-8681.
  CIRCLE 253 ON READER SERVICE CARD
- **Microbyte A**, $235; **Microbyte B**, $245. Paradox Enterprises, Inc., 150 South Camino Seco, Suite #113, Tucson, AZ 85710, (602) 721-2023.
  CIRCLE 254 ON READER SERVICE CARD
- **Tune-Up**, $49.95. MichTron, 576 S. Telegraph, Pontiac, MI 48053, (313) 334-5700.
  CIRCLE 255 ON READER SERVICE CARD

Mac & PC from pg. 45

PRODUCTS MENTIONED:

- **Magic Sac+**, $149.95; **Translator One**, $279.95. Data Pacific, Inc., 609 East Speer Blvd , Denver, CO 80203, (303) 733-8158.
  CIRCLE 186 ON READER SERVICE CARD
- **pc-ditto**, $89.95. Avant Garde Systems, 381 Pablo Drive, Jacksonville, FL 32225, (904) 221-2904
  CIRCLE 187 ON READER SERVICE CARD
- **Lotus 1-2-3**, $495. Lotus Development Corp., 55 Cambridge Parkway, Cambridge, MA 02142, (617) 623-6572.
  CIRCLE 188 ON READER SERVICE CARD
- **Microsoft Excel 1.04**, $395. Microsoft Corp., 16011 NE 36th Way, P.O. Box 97017, Redmond, WA 98073, (206) 882-8080.
  CIRCLE 189 ON READER SERVICE CARD
- **VIP Professional**, $149.95. ISD Marketing, Inc., 2651 St. John St., Unit 3, Markham, Ontario L3R 2W5, Canada, (416) 479-1880.
  CIRCLE 190 ON READER SERVICE CARD
- **Logistix**, $149.95. Progressive Peripherals, 464 Kalamath St., Denver, CO 80204, (302) 825-4144.
  CIRCLE 191 ON READER SERVICE CARD
- **WordPerfect 4.1 For The ST**, $395. WordPerfect Corp., 288 West Center St., Orem, UT 84057, (801) 225-5000.
  CIRCLE 192 ON READER SERVICE CARD
- **DEGAS Elite**, $59.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, (415) 571-7171.
  CIRCLE 193 ON READER SERVICE CARD

DISK INSTRUCTIONS

There are two kinds of files on your START disk. To make all of the files fit, we compressed all but a few of them using the ARChive utilities set. This compresses many different files together into a single file, reducing the overall size by 40 percent or more. We have provided the program ARCX.TTP on your START Disk so you can expand each file back into its original form. The only files that do *not* need to be un-ARCed are contained in the folder called "CYBER"; they are SCALEIT.CTL and TEST.3D2. These may be used with Cyber Control immediately.

GETTING STARTED

Your START disk is not copy-protected and you should make a copy of it immediately. Make sure that the write-protect window is OPEN on the START disk at all times.

Format a disk for backup.

1 Take a blank disk and make sure that the write-protect window on this disk is closed. Label this disk "START Backup" and place it in Drive A. *WARNING*: The contents of this disk *will be erased*, so be sure that there is nothing on it you want to save!

2 From the desktop, click once on the Drive A icon; it will change color.

3 Select the File option on the menu bar and then select Format from the drop-down menu. An alert box will appear with a warning; click on the OK button.

4 When the Format dialog box appears, select Single-Sided if it is not already highlighted and click on the Format button.

5 When the disk is formatted, another alert box will tell you how much space is available on that disk. Click on OK and then on the Exit button in the Format dialog box.

Copy your START disk onto your backup disk.

1 If you have more then one drive, put your START Backup disk into Drive B.

2 Put your START disk in Drive A.

3 Point the mouse cursor at the Drive A icon and then hold the left mouse button down. The Drive A icon will change color. Drag it to the Drive B icon (only the icon's outline will move). When the Drive B icon is highlighted, let go of the mouse button.

4 A message will ask you if you are sure you want to copy the disk. Click on OK. After a few moments, another dialog box will appear; click on the Copy button. When the copying is finished, you will be returned to the desktop.

(If you have only one drive, begin by inserting your START disk. You will have to switch disks several times during the copy operation; simply follow the instructions on the screen. When the computer refers to Disk A, it means your START disk; Disk B is your START Backup disk.

Now put your START disk in a safe place and use your START Backup disk. You may now put your START Backup disk in Drive A and double-click on the Drive A icon to see the disk's contents.

WHAT? NO START DISK? CALL (800) 234-7001!

Every issue START features great programs on disk. If you bought this issue of START without the disk, pick up your phone and call us NOW!

START is normally sold in the disk version for $14.95. But for those of you who want to read the magazine before buying the disk, it's available for $4.

If you want the *full* version of START, you can order the companion disk by calling the Disk Desk toll-free at (800) 234-7001. Our Customer Service specialists are on duty from 6:00 a.m. to 6:00 p.m. Pacific time. Or you can order your disk by mail using the order form inserted into this issue. Each disk is $10.95 plus $2.00 shipping and handling.

UN-ARCING THE FILES

Copy the ARCed file you wish to use and the program ARCX.TTP onto a blank formatted disk.

1 Format a second blank disk just as you did to make your START Backup Disk; label this disk "Un-ARC Disk."

2 Find the icon of the file "ARCX.TTP" and point to it with the mouse cursor. In the same way that you dragged the Disk A icon outline when you copied your START disk, hold the left mouse button down and drag the ARCX.TTP *file* icon outline to the Disk B icon. When the Disk B icon changes color, let go of the mouse button.

3 When the computer asks you whether you're sure you want to copy the file, click on OK.

(Note to single-drive system users: You will have to swap disks several times when copying files, just as you did when copying a disk. Just remember that now your START Backup disk is Disk A and your Un-ARC Disk is Disk B.)

4 Now repeat steps 2 and 3 to copy the file you want to use onto your Un-ARC disk. Refer to the companion START article for the correct file name.

Now, unARC the file.

1 Insert your Un-ARC disk into Drive A and press the Escape key to see the directory.

2 Double-click on ARCX.TTP.

3 At the prompt, type in the name of the ARC file you just copied over to your Un-ARC disk and press Return. As the program runs, it will display the names of the new files as it unARCs them.

If ARCX.TTP can't find a file, it may be because you have misspelled the name of the ARC file. Remember, you must type the filename *exactly* as it appears in the directory.

In addition to the programs, some ARC files may also contain source code listings or an ASCII text file (called BREAKDWN.TXT) which shows the program's structure. You can examine this file from the desktop by double-clicking on its icon and then clicking on View (to see it on the monitor) or Print (to print it out). ■

DISK CONTENTS

SUMMER TRAVEL AND FUN—ON YOUR START DISK!

Whether your summer plans include a trip to Disney World or just staying at home with your ST, this issue's START disk will help you make the most of your leisure hours.

Planning a vacation? Then boot up Ron Schoefer's **The Traveler** to plan your route across the country or the world.

How about creating a world of your own? Tom Hudson's **Creation!** will let you build mighty fractal mountains and extraterrestrial landscapes! You can save the pictures in DEGAS or NEO format, or even save your creations as CAD-3D objects! As an added bonus, Creation! lets you load and display data from the United States Geological Survey—use the program to generate accurate topography maps! (A sample file of San Mateo Valley's Big Basin is included on your START disk.)

Tired of online help screens that never have the help you need? Write your own with **Igor**, a dynamite desk accessory from John Jenkins, author of STARTKey (Winter 1987 START).

Twister, Dave Small and Dan Moore's floppy disk formatter, is back! The original (Spring 1987 START) was one of our most popular programs, and now Twister will work on the Megas and *all* current versions of TOS.

Dizzied by the amount of information and programs in your START library? Want to buy a back issue but aren't sure which issue has what you need? A complete index to *all* ST material from START *and* Antic's ST Resource appears on your START disk, ready to print out or load into your favorite database.

And finally, kick back, relax and play **START Klondike**—the classic Solitaire game! From one of the authors of Atari's Joust, START Klondike will let you play solitaire all day—without shuffling cards once! ■

by Heidi Brumbaugh

STRETCHING THE DESKTOP LIMITS

The GEM Desktop is useful for most file copies, but if you are moving a large group of files into a folder the disk window may not be large enough for you to access both the files you wish to copy and the target folder. One solution is to open up two copies of the same directory, viewing different sections of the directory in each window. Other times, simply changing the order of the files using the View menu will solve the problem. Programs are usually largest, so sorting by size will usually put them at the top of the directory. If you want to copy a group of the same type of files or your most recent files, sort by type or date. The idea is to maneuver the files to copy together, preferably at the top, so they are closest to the folders.

Remember that you can select a group of files by holding down the left mouse button and dragging a box around them, or by holding down the shift key while clicking on the file names.

PRT.WRK AND PRT.BAK (HUH?)

So, you finally finished typing the first draft of that ten-page paper in Word Writer ST, printed it out, and were so happy to see the printout you turned off the computer and went to go take a break—forgetting to save your work. Aaargh! But wait—did you say you just made a printout? Turn the computer back on, get back into Word Writer, and load the file PRT.WRK from the last data disk you were using. The file you forgot to save should then appear in the edit window.

What happened? Well, when Word Writer ST prints a file, it first writes the file to disk in the file PRT.WRK. Then it spools the file to the printer directly from the disk, so you can continue to do work while the file is printing. If there is already a file called PRT.WRK on the disk, that file will be renamed PRT.BAK, so if you lose a file you printed a little while ago, it might be worth checking through these PRT files on the disks you use most—you just may find it. If you recover a file this way, be sure to save it under a different name immediately, or the next time you print something out you may lose it again.

HARD DISK SAVES

A bad desk accessory on your hard disk usually means trouble: it will prevent you from booting so you won't be able to get to the desktop. Don't despair. Turn off the hard disk, reboot the computer with a floppy and turn the hard drive back on. Next, get the disk that came with your hard drive and run the program that usually runs from the auto folder. Install a new icon for the hard drive, open the window and delete the offending desk accessory.

COLOR IN A MONOCHROME WORLD

If you've decided to get a second monitor so you can run any ST program, it's okay to set them up side by side but it's a good idea to turn off the one you're not using. Each monitor generates radio frequency interference (RFI), because color monitors refresh the screen roughly 60 times per second and monochrome monitors have a different rate (roughly 70 times per second), the interference from one monitor can affect the display on the other. (For some reason, the effect on monochrome monitors is worse than the one on color monitors.)

If you don't want to turn off the monitor you're not using, try setting one above the other or at a slightly different angle.

As always, don't keep floppy disks and drives on or up against the monitors. Interference can wreak havoc with magnetic media.

STUCK ON THE THIRD LEVEL?

Having trouble getting past the sandworms on the third level of FTL's Dungeon Master? These creatures may be venomous, ugly and mean but they're by no means indestructable. Try luring them into a doorway, then close the door so it will bash them. Don't back up; this will just let them into the room with you. Keep chopping at them until they back off, and be sure to have lots of unven potion handy. Fireballs also work well; there's nothing quite so satisfying as watching a worm explode.

RENAMING FOLDERS

The ST users manual states that once a folder has been created you cannot rename it. To get around this, drag the folder to another section of the same window. GEM will regard this as a request to copy the folder, and since it will find an existing folder with the same name it will give you the "Name conflict during copy" dialog box. Press the Escape key, then type in the new name and press return. You will return to the Desktop with two copies of the same folder; now you can simply delete the folder with the old name. Make sure you have enough disk space for two copies of the same folder before you try this. Thanks to David Litchman of Stamford, Connecticut for the tip. ■

Got an ST technical trick or tip to share? Send it to the Clipboard, 544 Second St., San Francisco, CA 94107.

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Creation!

Build Mountains with START's Fractal Landscape Generator

by Tom Hudson
START Contributing Editor

Now your ST can make mountains out of molehills – of data. Tom Hudson, ST graphics guru and author of Degas Elite and CAD-3D, has developed Creation! especially for the readers of START. Generate imaginary mountain ranges or use geologic survey data to reproduce real topography, then save your creation as a CAD-3D object or as a DEGAS or NEO image to give your art or animation that natural look.

Move mountains with Creation! CREATION.ARC is on your START disk.

How would you like to have your ST or Mega create realistic-looking laodscapes with plains, mountain peaks and even oceans? What's more, what would you think if I told you that your computer could display real topographical data from the United States Geological Survey (USGS)? Well, with Creation!, you can do all this *and* generate and save color-coded topographic maps and create a 3D object file for use in CAD-3D. All this capability is merely a few mouse-clicks away when you use Creation! Let's see how it's done.

PRESENT AT THE CREATION

You'll find all the necessary files in CREATION.ARC on your START disk. Copy CREATION.ARC and ARCX.TTP to a freshly formatted diskette and follow the Disk Instructions elsewhere in this issue to uncompress the files. In order for CREATION.PRG to run, CREATION.RSC must be in the same directory. CREATION.ARC also contains the customized Big Basin data file, called BIGBASIN.DAT, the source code files and a program take-apart to help you understand Creation!'s operation.

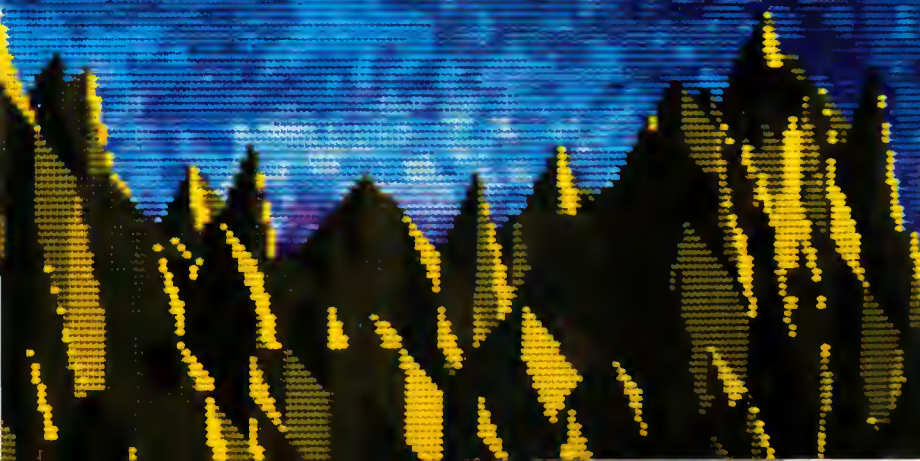
Creation! must be run in low resolution mode on a color monitor. It will not run on a monochrome monitor or on a color monitor in medium resolution mode because the ST's 16 colors are required for the landscape altitude displays.

Let's run through a couple of sample sessions with Creation!. We'll learn the details later.

First, let's assume you want to generate a random fractal map and save a perspective view to disk, along with a CAD-3D file in moderate, or 40 X 40, resolution. Run Creation! and click on the "Random Fractal" selection on the GENERATE menu. After the landscape is generated, click on "Perspective" on the VIEW menu. If the map is satisfactory, you're ready to save it. Otherwise, you can keep generating new random maps until you have one you want.

To save the perspective view, click on "Save Perspective" on the FILE menu. When the file selector appears, type in the filename you want the picture saved under, including the .PI1 or .NEO extension. The image will be saved to disk.

To save the 3D file, click on "Save 3D File." When the resolution selection dialog appears, click on "40X40".

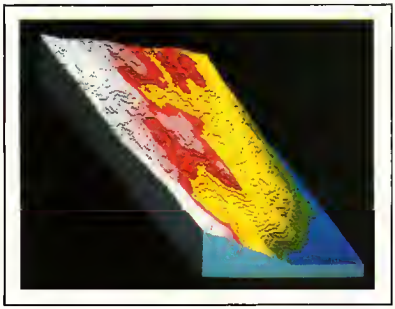


Creation! . . .

When the file selector appears, type in the filename you want to have the 3D file saved under, including the .3D extension. That's all there is to it!

Now, let's assume you want to use some real map data, such as the BIGBASIN data file, and save the top view, the perspective view and a 3D file in an 80-by-80 resolution. Run Creation! and select "Load Map Data" on the FILE menu. When the file selector appears, select the BIGBASIN.DAT file and the program will read the data into memory.

To generate a work map from this raw data, click on "Use Map Data File" on the GENERATE menu and select the "Full" button to use the entire map data file. The program will sample the map data and create the work map. Now generate top



A random fractal landscape seen in perspective view.

and perspective views by clicking on those selections on the VIEW menu. Save these views to disk by using the "Save Top View" and "Save Perspective" selection on the FILE menu. Remember to use .PI1 or .NEO extensions. Finally, save the 3D file by clicking on "Save 3D File" on the FILE menu, then selecting "80X80" and entering a filename with .3D extender for the 3D file. You're done!

I've found the Creation! program to be a great help in creating realistic, synthetic landscapes very quickly. I've sat in front of the computer for hours generating random mountains, valleys and bays just for fun. Its ability to use real-world landscape data, though, makes it a valuable tool for visualizing the actual terrain of our planet.

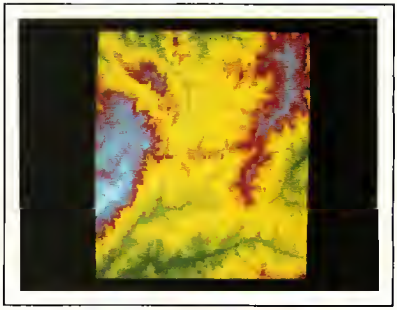
USING CREATION!—THE MENUS

When the program starts, you will see a familiar GEM menu bar across the top of the screen. There are four drop-down choices, DESK, FILE, GENERATE and VIEW.

On the DESK menu are your desk accessories and "About Creation!" which displays the program credits.

On the FILE menu, you'll find:

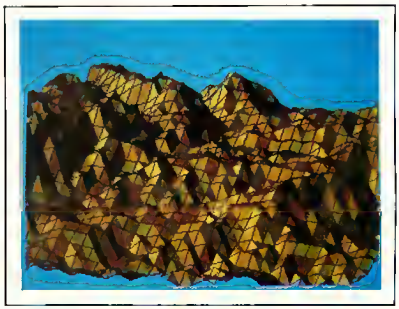
"Load Map Data" allows you to load in a real-world map data file, available from Peerless Engineering Service (see sidebar). These data files contain sections of the earth's surface which have been mapped by the USGS or the Defense Mapping Agency for various uses. Map data loading can take some time, since standard files are commonly over 300K in size. In order to fit BIGBASIN.DAT on the



Top view of the Big Basin in San Mateo County, California.

START disk, I had to reduce the resolution of the Peerless/USGS data file from its original file size of 352K, but Creation! will read either reduced resolution or full resolution Peerless format files. Once you have loaded the map data, you can use the GENERATE drop-down to create a map. "Save Top View" saves the top view of a previously-generated picture of a map to disk in either the DEGAS (.PI1) or the Neochrome (.NEO) format. You must include the .PI1 or .NEO extension in your filename to save the picture in that format. (Generate a top view from the ▸

The Big Basin in CAD-3D 40-by-40 resolution.



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Creation!. . .

Re-Creating the World

by Andrew Reese
START Editor

When Tom Hudson first suggested adapting Creation!, his fractal landscape generator, to use real-world data, it sent us on a search for sources. We first called the United States Geological Survey (USGS) office in San Francisco After several more calls, we were told that USGS Digital Elevation Model data is available from the Cartographic Information Center, but only as data files on nine-track tape—not quite ST-compatible! Finally, we were referred to Peerless Engineering Service in Soquel, California as the only northern California source for microcomputer-compatible data files.

Ronald L. Berry, President of Peerless was most helpful. He explained that not all of the United States has been mapped by the USGS and the Defense Mapping Agency (DMA), but that his company can obtain and convert any existing USGS and DMA data and provide that data to customers on 5¼ inch or 3½ inch IBM format disks. Since the ST can read IBM format 3½ inch disks directly, we asked for a sample to see if Hudson could use the data in Creation!

Two days later, a 3½ inch IBM disk arrived from Peerless; on it was the data file for the Big Basin region of San Mateo County, California. When Hudson was able to use the data, Berry allowed START to make it available to our readers. Because of disk space limitations, we asked Hudson to reduce the file size. By reducing the resolution, i.e. by not including every data point in the original file, Hudson was able to reduce the original Big Basin file by more than 75%.

If you would like to buy a data file for a particular area of the country, contact Peerless Engineering Service directly The USGS files have a scale of either 1 to 250,000 (one degree per side) or 1 to 24,000 (7.5 minutes per side). Peerless must purchase each data file from the USGS and then convert it using a propietary file conversion process. If Peerless has the file you want in stock, they will charge approximately $100 for converting it to Creation!-readable format.

It may be that there are other firms around the country who have converted USGS data to microcomputer compatible files. However, these files may not be compatible with Creation! If you locate another source for converted USGS files, please let us know here at START. We'll be happy to pass on the information to our readers. ■

PRODUCTS MENTIONED

- USGS Data, (see text). **Peerless Engineering Service, P.O. Box 71, Soquel, CA 95073, (408) 462-0330.**
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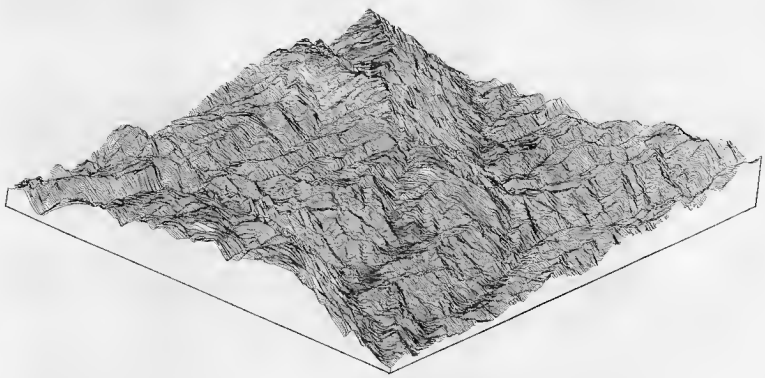

The effects of erosion are clearly visible when the full Big Basin data file is plotted using a 30 by 30 meter grid. (Illustration courtesy of Peerless Engineering Service.)

Creation! . . .

VIEW menu before selecting this option.)

- "Save Perspective" saves the pseudo-perspective view of the map to disk in the same way as the "Save Top View" selection above. First generate a perspective view from the VIEW menu before selecting this option.
- "Save 3D File" saves the current map data to disk in CAD-3D's .3D file format. This file is loadable by either CAD-3D 1.0 or 2.0, and once loaded into CAD-3D, it can be viewed in true perspective with various coloring, lighting effects and camera angles. You have the option of creating your 3D file in one of three resolutions. The "80X80" option produces a map which is 80-by-80 vertices, for a total of 6400 vertices. This is a very fine resolution and takes a lot of memory and some time for CAD-3D to display. The "40X40" resolution is a bit more manageable, with only 1600 vertices, and the "20X20" resolution is smaller still, with only 400 vertices.
- "Quit" exits the Creation! program, returning you to the desktop.

I've sat in front of the computer for hours generating random mountains, valleys and bays just for fun.

A NEW GENERATION

From the GENERATE menu, you create your working map either as a fractal or from a data file.

- "Random Fractal" generates a truly random landscape using a technique known as fractals. You don't need the USGS map data files to create a fractal map. When you click on this option, a progress dialog is displayed which shows what the program is doing. There are eight processing phases in the creation of a fractal map, each one taking roughly twice as long as the previous phase. After all eight phases are complete, the program goes through a final processing phase, where the raw map data is converted into 3D data and color-coded 2D display data.

  When the fractal map is ready to view, the progress dialog disappears. You can then use the VIEW menu selections to look at your new landscape or use the FILE menu to save it to disk as a 3D object.
- "Use Map Data File" generates a map based on the data from a Peerless/USGS data file. You must load a map data file using the FILE menu before using this option, otherwise it is disabled. When you select this option, the program then allows you to choose which part of the map data to use for your map. If you want to use the full USGS data file for your map, click on the "Full" button or press Return.

  If you want to "zoom in" on a smaller portion of the map data, use your mouse to select the portion of the map to display. Simply click in the large square box where you want one of the upper corners of the sample to appear and drag the mouse to the right—you will see a square "rubber box" appear. This is the area you will be using for your map. The rubber box is always square and its size is determined by its width, so just move the mouse left or right to adjust it. When it is the size you want, release the mouse button. Then click on the "Partial" button. (It's always a good idea to look first at the full view of a map before picking a smaller area to look at.)

  Once you choose "Full" or "Partial", a two-stage progress dialog appears. The first stage is labeled "Sampling Map Data" and means that the program is stepping through the map data and sampling points according to your request. After this is done, the second stage, "Final Processing" is performed. This creates the color-coded work map and a 3D object database. You can now use the VIEW menu to look at the map or use the FILE menu to save the landscape as a 3D object.

A VIEW FROM ABOVE

The VIEW menu allows you to look at your map with color-coded altitude values. There are two viewing options:

- "Top" is a top view of the map, which is displayed as a multicolored square in the center of the screen. The altitudes range from blue (water or altitude less than 0) to green (lowlands) to red (highlands) and white (mountaintops). To return to the main screen, click the left mouse button. After you have generated the top view, it may be saved to disk from the FILE menu.
- "Perspective" is a pseudo-perspective (isometric) view of the map, displayed in the same color coding as the top view. This view is more informative than the top view, as it allows you to see actual altitude changes in the map more easily. Once generated, this image can be saved to disk from the FILE menu.

FINAL NOTES

The Creation! program, while providing a quick, easy way to generate images of real and synthetic landscapes, could be ▶

Creation!. . .

improved. For example, I would like to see a fully user-controlled landscape editor, which allows the placement of peaks, valleys, water areas, etc. by the user, with random fractalization of the remaining area. This is a rather complex piece of code, and time and space did not permit such a feature in Creation!.

Another interesting observation came up while testing Creation! with real landscapes. Creation!'s fractal landscapes, while fairly realistic, differ from the real landscapes because the real maps have erosion features, such as valleys that have obviously been affected by water erosion. While highly math-intensive, I'd like to see such an effect modeled by the ST. (Editor's note: *If you would like to see an enhanced version of Creation!, let us know!*)

I hope you enjoy Creation! as much as I do. It shows that with the right kind of information, such as the USGS data, the ST can perform every bit as well as more expensive machines. ■

If you'd like to see more articles like this, circle 210 on the Reader Service Card.

Tom Hudson is a Contributing Editor of START and the creator of DEGAS, DEGAS Elite, CAD-3D, Cyber Control, Cyber VCR, Cyber Sculpt and The Antialiaser.

PRODUCTS MENTIONED

- **Cyber Studio (containing CAD-3D 2.0)**, $89.95. The Catalog, 544 Second Street, San Francisco, CA 94107, (800) 234-7001.
- **NEOChrome**, $29.95. Atari Corp., 1196 Borregas Ave., P.O. Box 3427, Sunnyvale, CA 94088, (408) 745-2000.
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- **DEGAS Elite**, $39.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171.
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Imitating the World-Fractal Landscapes

The technique employed by Creation! to generate random terrain was first widely seen in the Lucasfilm game "Rescue on Fractalus." That program created the jagged mountains and valleys of the planet Fractalus using a simple algorithm to generate a form of fractal. Later, the technique was used in the "Genesis Device" simulation sequence in "Star Trek II: The Wrath of Khan." When properly applied, this technique produces a complex texture that looks very realistic.

These fractals are not the same as the Mandelbrot set or similar complex fractals of the sort you saw in the August, 1986 Antic. I used a much simpler technique that's also much faster.

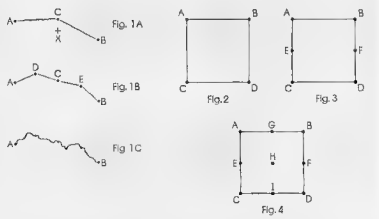
The basic algorithm is very easy to write, and is illustrated by *Figure 1*:

1. Randomize two endpoints, A and B.
2. Find the midpoint of points A and B, labeled X.
3. Add a random value to the altitude of this point, based on the distance from point A to point B, and label this point C (*Figure 1A*).
4. Repeat 2-3 using points A and C as endpoints, creating point D, and C and B as endpoints, creating point E (*Figure 1B*).
5. Continue this process until all points are filled (*Figure 1C*).

The Creation! program uses the same technique, but does it in three dimensions rather than two. First, the program starts with a square grid that is empty, and randomizes altitudes for each of the four corners (points A, B, C and D), as shown in *Figure 2*.

Next, it goes through the grid and does a vertical fractal randomizing pass, creating points E and F (*Figure 3*). E is a "fractalized" point between points A and C; F is between B and D. Now the program does a horizontal fractal randomizing pass, creating points G, H and I (Figure 4) between points A and B, E and F and C and D, respectively.

This process of vertical and horizontal passes is repeated eight times, which is what gives us the eight phases in the fractal map generation. Each successive pass results in more and more "holes" in the map being filled in, until the entire



grid is one big fractal. When complete, we have a fractal map that is 257 by 257 pixels. This map is then sampled down to 160 by 160 pixels for a displayable image, and down to the various resolutions for the 3D file creation process. ■

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A Cyber Studio Family Gathering

By Andrew Reese, START Editor

SCALEIT and TEST.3D2 are in the CYBER folder on your START disk.

This is the first of several columns intended to help you make better use of the Cyber Studio family of graphics programs from The Catalog. If you haven't used them, let me explain briefly how they fit together.

LET'S MEET THE FAMILY

At the heart of the Cyber Studio family is CAD-3D 2.0, the three-dimensional modelling tool created by Tom Hudson. With CAD-3D, you can create three-dimensional objects and, using its built-in tools, you can also move them, move the camera (the viewpoint), change the lighting and record animations.

CAD-3D animations, however, require a great deal of planning, time and extreme care. To correct this shortcoming, Hudson created a control language, called PD3DCTL in its earlier public domain form and Cyber Control in its polished commercial version. Cyber Control is a unique and specialized BASIC-like language that loads as a desk accessory on boot-up. After you load CAD-3D 2.0, you activate Cyber Control by selecting it from the Desk menu, just like any other accessory. But because of the communications pipes that Hudson built into CAD-3D, Cyber Control can "take over" CAD-3D operations and create animations no sane human would attempt without it.

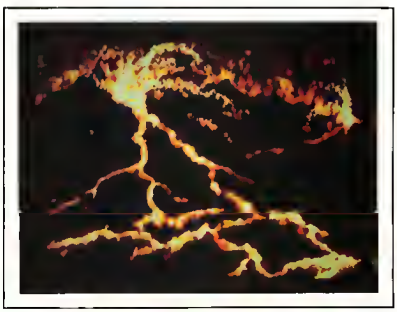
Once you have created a Cyber animation and stored it on disk, you'll often want to polish your animation. That's where Cyber Paint comes in. To my mind, it is one of the most spectacular paint and animation programs available on *any* microcomputer! (I also own an Amiga 2000—*horrors!*—so I have some basis for comparison.) Cyber Paint can load a CAD-3D/Cyber Control animation and perform all sorts of wonders on it. It also shines, however, as a stand-alone paint and 2-D animation program.

One caution in using Cyber Paint or any other animation software: *Buy as much memory as your budget can afford!* Animation is very memory intensive; even with 2.5 megabytes of RAM, I still occasionally see "Out of Memory" alerts when I get over-ambitious (or sloppy).

MAKING THINGS FIT

One of my first uses for the Cyber Studio family was to create animated models of a traffic accident. With that kind of real-world animation, one of the first problems I encountered was scaling several vehicles accurately to a specified universe size. In the CYBER folder on this issue's START disk, you'll find SCALEIT.CTL, the simple Cyber Control program that I created to solve the problem. SCALEIT.CTL scales an object or group in all three dimensions to whatever dimension you specify along an axis. Its accuracy is plus or minus ten percent.

You'll also find a simple cube object called TEST.3D2 in the CYBER folder on your START disk, so you can run SCALEIT immediately to see how it works. You can use the code from SCALEIT.CTL in your own Cyber Control programs, but of course you'll have to substitute the name (and path) of the object or group you want to scale after



"Creation"—done with DEGAS Elite and Tom Hudson's Anticlicser. The artist set up a palette ranging from dark red to orange to white, then airbrushed white lines on a black screen. By repeatedly airbrushing and antialiasing the lines, a glowing red lava effect was created. Artwork by Jon A. Bell.

the command "load3d."

When you examine SCALEIT.CTL, you'll see that it uses the *scale* command to perform simultaneous proportional scaling on an object or group in all three dimensions. You should have your object looking pretty much as you want it before you use SCALEIT. Another Cyber Control command, *axisscale*, will scale each dimension independently. In fact, I wrote a much more precise scaling program using axisscale and iteration factors of 99 and 101 percent. While much more precise than SCALEIT, it was cumbersome and slow.

You may want to modify SCALEIT to add independent axis scaling and to increase its accuracy. At present, SCALEIT uses scaling factors of 90 and 110 percent. Just change the variable *it* to whatever number you wish between the Cyber Control limits of 50 and 200 percent. Another possibility is allowing different units of measurement for the universe and object—for example, miles and feet.

One other technique may require added explanation. The *bounds* command is used to find the minimum and maximum dimensions of the object in each dimension. After each bounds command are three expressions in the format *xnow=(MAXX-MINX)/90*. The Cyber universe is 9,000 units along each axis, and (MAXX-MINX) gives us the X-dimension of the object. Dividing the result by 9,000 and multiplying it by 100 (or merely dividing it by 90) gives us the percentage of the universe the object occupies. *xnow*, *ynow* and *znow* are the target percentages and *xnew*, *ynew* and *znew* are the trial percentages after each scaling. Other than these details, SCALEIT.CTL should be easy for you to understand and use. It's heavily commented and doesn't use any fancy trees or splines.

DEATH TO THE JAGGIES!

Everybody knows and hates *jaggies*—those stair-step edges on curved lines. In his copious free time, Tom Hudson has produced an answer to the jaggies problem. It's a desk accessory he sells directly called "The Antialiaser," and it works by filling in the jagged stair-step openings with intermediate colors (a process called *anti-aliasing*—hence the name). The Antialiaser can be called by Cyber Control to anti-alias a frame during recording or it can be used with Hudson's other ST triumph, DEGAS Elite, to reduce the jaggies in DEGAS art. No self-respecting ST artist or animator should be without this little wonder.

One caution, however: effective anti-aliasing requires that your palette have intermediate shades between the object and background colors. If your picture is too complex or your palette too diverse, you may be dissatisfied with the results. As long as the ST uses a maximum of only sixteen colors in its broadest (non-Spectrum 512) palette, however, this limitation will be a fact of life. ■

PRODUCTS MENTIONED

- **Cyber Studio,** including **CAD-3D 2.0**, $89.95; **Cyber Control**, $59.95; **Cyber Paint**, $69.95. The Catalog, 544 Second Street, San Francisco, CA 94107, (800) 234-7001.
- **The Antialiaser,** $29.95. Tom Hudson, P.O. Box 3374, Shawnee-Mission, KS 66203.

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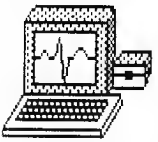

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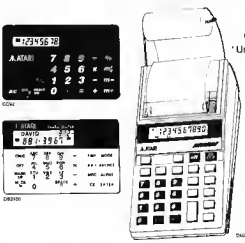

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Let's Twist Again!

by Dave Small with Dan Moore

Increase disk capacity! File TWISTER.ARC on your START disk.

I've always liked tools.

One of the greatest presents I ever got for a birthday was a Sears toolkit. At age 16, I immediately went to work with it, disassembling and (sometimes correctly) reassembling the family cars. While it drove my parents crazy, I learned a lot about cars—and about tools. I've never worried about a car breaking since, because now I know a lot about how cars work, and I have my tools.

When I went to college, I took my toolkit along. Some of the great unsolved pranks at Colorado State have their home in my toolbox. Pliers, socket wrenches, wire cutters, phone-tapping tools. . . The statute of limitations isn't up yet, so I'll pass on mentioning anything else. But none of those pranks would have been possible without those tools

And I've carried that philosophy forward in my programming career, such as it is. *I always try to accumulate tools.*

People who've followed my writings know I regard computers as somewhat mystical, troublesome beasts, which break a lot. Sometimes they break for no reason at all. When the computing gets rough, the programmer had better have a well-stocked toolbox.

Hence the thrust of this column: A place to accumulate tools to help you in your ST life.

Incidentally, a tool isn't any good without enough knowledge to use it. Sometimes a little knowledge—let's say, how the hard disk is partitioned—will be enough to help you fix a problem. Knowledge is also a tool, and will be part of this column.

Some tools will be like a torque wrench; you only need them during a major engine rebuild. Some tools will be like a pair of pliers, useful almost daily. And there will probably be tools you'll never use.

I always try to accumulate tools.

But these tools didn't get written for fun. Many of them are from Dan's and my personal toolboxes of disaster fixes. Some of them were written in the heat of desperation; others were written in the bitter aftermath of "I'll never let *that* happen again."

So, let's open the toolbox.

MEGA TWISTER

Back in the Spring 1987 START, we introduced a disk format program known as Twister. Twister formatted disks so the ST could run them at twice the present disk rate. Basically, Twister helped the original ST ROM operating system overcome the delay caused by stepping the head from track to track.

Twister was written as a part of the "megabyte-a-minute" backup program, an exploration of how fast data can be moved from a hard disk to a floppy.

Twister gave you 10 sectors per track, instead of the ST's usual 9. This gave you 40K more per disk side, and at twice the speed! It soon became an alternate disk standard format. There were also some explorations done of extending Twister to 11 sectors per track, and 82 tracks per disk—but those don't give you much reliability moving from one ST to another.

Since then, Atari has issued a new revision of the TOS ROMs, called the "Blitter" ROMs, and installed them in the new Mega computers.

(Why are they named "Blitter" ROMs? Imagine about a thousand independent ST software engineers holding their fingers to their mouth, saying "b-b-b-b-blitblitblit," as they discover their applications don't work on the new ROMs, and they're going to have to do a rewrite. Realistic special effects include moans, rolling of the eyes, and fainting.)

Yep, it happened to us too. Twister and the twister-formatter portion of Meg-A-Minute broke on the new ROMs. The reason? We used a variable that the ST uses to remember the disks' current track number, and it changed in the blitter ROMs. We must tweak this number to get the "verify" portion of the formatter to work.

You'll find the new Twister, along with its source code, on your START Disk in the file TWISTER.ARC. Copy

continued on page 88

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CIRCLE 065 ON READER SERVICE CARD

Mick Fleetwood of Fleetwood Mac

By Mard Naman

Fleetwood Mac has been one of the most exciting bands of the last twenty years. Evolving from an English blues band in the 60s to a multi-platinum rock band in the 70s and 80s, "Big Mac" has combined artistic brilliance with commercial success and carved its place in pop history.

The group has seen many changes over the years, but through it all has been the steady beat of English band leader and drummer extraordinaire, Mick Fleetwood. Now for the first time, Mick is leading his band into the wonderful world of Atari-based MIDI. But Mick's decision didn't come easily. In fact, there were doubts and problems that had to be addressed before Mick would make the jump.

ALL-NATURAL

"I'm a great stickler for keeping things as natural as possible," says Mick. Over the past few years, Mick had been introduced to drum machines and various MIDI products, but was never interested. "Things weren't natural sounding," he says. That all changed the day Mick met record producer Jimmy Hotz. Hotz is not only a technological wizard; he has also become the Pied Piper of MIDI. From B.B. King to Dave Mason to Mick Fleetwood, Hotz has been able to take skeptical musicians and make them total converts to MIDI.

And Mick might have been the hardest sell of them all. He was not interested in the latest electronic technology and had been known to refer to electronic hardware as "those wretched gadgets." But Hotz changed all that. "I wouldn't be anywhere near this stuff if it weren't for Jimmy," confesses Mick. "He was definitely the right person for me to meet," he adds. "He found a way to make it sound natural and retain the emotion of what I was trying to do. I've learned I can integrate MIDI into my music and really use it in a very human way. I've learned you can apply it to whatever you want. If you want it to sound like a bloody robot, it will. But on the other hand, you can really do some wonderful things with it that are very organic."

The natural sound was crucial to Mick's conversion to MIDI. "To my ear, the sound reproduction is 100%," he says, "Otherwise, I wouldn't be doing it." Hotz says there have been other obstacles that have kept top drummers like Mick away from MIDI, but he has addressed them all. What were they? "One is the lag time in the conversion process," says Hotz. "How fast is your translator? The second is false triggering. You don't want to hit a tom and have your snare triggered. Another is being able to pick up subtleties. These are difficult things, but I've come up with some techniques to deal with them. The drums Mick uses on the road translate the most subtle ideas he could possibly have."

HOW DO I USE THEE?

Fleetwood Mac will be using MIDI technology and the Atari 1040 ST in many ways. Currently, they are putting together a TV special for Showtime, to air later this year. A concert was recorded live at the Cow Palace in San Francisco last year while on tour supporting their latest album, *Tango in the Night*. To supplement the sounds from that recording, Mick and Jimmy sampled some of Mick's best drum sounds and put those back in the songs. They used the Atari 1040 ST as a sampler and sequencer, with Hybrid Art's ADAP Soundrack System hooked in. They also used the ST as an editor for the many synthesizer sounds they wanted to blend in. The result has been a cleaner, more exciting sound that combines the best of studio and live recording technologies. Says Hotz, "We'll get the best studio-quality kicks, snares and other drum sounds on our live tape."

The band will be touring Europe this spring, and one thing Mick is very excited about is MIDI *lighting*. Basically, his drumming can actually trigger the lighting changes in the show. Jimmy Hotz is putting the system together for the band and explains, "Every time Mick hits a kick, snare or other drum, the pulse of the music actually triggers the lighting levels."

The advantage of this? "If you're the lighting director, sitting by the sound console 100 feet from the stage, you're hearing a 100 millisecond delay before you punch the lights. Then the lights themselves have certain delays. When you trigger directly from the sound source, it's much more in sync." Here again, the Atari will be used for sequencing. As Mick puts it, "With MIDI

lighting, the timing is right on the button. If someone's doing it manually, there's always a time delay from the time you hear the beat and the lighting change."

For their European tour, the band will also have access to sampled sounds for the keyboard and guitar. "We've concentrated on sampling sounds off the last album," says Mick. "Normally, we go on the road and just play the songs with the instruments we've got. This is the first time we're supplementing sounds and it enables us to sound more like the record. I think that's really a big plus and I'm really excited about it."

WEARING MIDI?

Another thing Mick is excited about is being able to trigger sounds during his big drum solo. Hotz has actually fitted Mick with a "drum vest" equipped with sensors Mick hits to trigger different sounds. "My drum solo is my vest solo," laughs Mick. "I've got five sensors. Although I could have endless programs, at the moment I use about six." Mick can switch easily from tablas to screams to bells—basically whatever he wants to put in there. "I've got human screams, spooky chords on keyboards and other weird stuff. It's a lot of fun."

The sensors are touch- and pressure-sensitive. Mick hits the vest on the different sensors to trigger the sounds. "Basically, I'm beating the hell out of myself," he laughs. "I'm abusing myself in public! I come out from behind the drums and that's essentially what it looks like—I'm beating myself on various parts of the body."

Mick, who delights in being a little off-center, relishes the role. He's especially fond of one unusual maneuver. "I've got one sensor right over my codpiece, which always goes over big with the audience," he says. "For one of the settings, as I hit myself in the crotch, I get the sound of breaking glass!"

MOVING RIGHT ALONG. . .

When Fleetwood Mac returns from their European tour, they plan to go back into the studio almost immediately. They already have most of the songs written. With the departure of Lindsey Buckingham, they are anxious

Mick Fleetwood, the drummer Fleetwood Mac marches to.

to put out a record with their new band members, Billy Burnett and Rick Vito. One of the things they will do for the next album is sample Stevie Nicks's vocals. Says Hotz, "When the band starts the new record, I'm sure we'll sample her vocals and fly them into choruses."

Hotz already has experience with this. When he worked on B.B. King's latest album, Stevie Nicks sang background vocals on one song, and Jimmy flew them in. Hotz says in the future the band may sample Stevie's background vocals to use in concert. "But," he warns, "if you sample background vocals, you better make sure when you trigger the vocal that the tempo of the song is exactly the same. Otherwise, she starts on time, but she doesn't finish on time."

Mick is particularly looking forward to the sounds MIDI technology will enable him to explore on the next album. "It's real nice having so many options," he says. "I'm looking forward to doing some real weird stuff—like spreading sound around. I've heard what MIDI can do to spread drum sounds, like taking a snare sound from left to right and having it disperse. You'll get to hear it on our next album."

"My main interests are the bass and snare drums. On the next album, I really want to use MIDI to build up layerings of sounds, endless amounts of snare drums piled all together. The power of stacking 12 snare drums together is unbelievable, incredible!"

For Mick Fleetwood, using the new MIDI technology is in line with the band's philosophy to keep evolving. He says, "As a band, we try to keep going forward and to keep getting better at our craft."

It's clear that the Atari ST and MIDI are helping Fleetwood Mac do that. ■

If you'd like to see more articles like this, circle 167 on the Reader Service Card.

Mard Naman is a freelance writer who specializes in personality profiles, and is a frequent contributor to START.

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Dr. T's Musical Workstation

From Random Thoughts to Finished Score

By Jim Pierson-Perry

Dr. T's Software has just raised the stakes in the ST MIDI software arena. They're the first company to release an integrated MIDI workstation capable of taking your musical ideas through to performance and printed score. The workstation is built around the Keyboard Controlled Sequencer Level II (KCS II) and a multi-program environment (MPE) shell which runs compatible Dr. T programs from within the KCS II. These additional programs currently include The Copyist, for transcribing MIDI data to sheet music, and patch editors for the Yamaha DX7, Roland D-50 and MT-32 synthesizers.

The KCS II is the newest incarnation of Dr. T's premier sequencer. Besides the MPE, they've added two new program modules for advanced editing and algorithmic composition: the Master Editor and Programmable Variations Generator (PVG). You'll need one megabyte of memory to run the KCS II by itself or with a patch editor under MPE; two megabytes or more to run KCS II with The Copyist under MPE.

A full review of KCS II or The Copyist would take more space than this article permits, as well as some background music education. Instead, I'll focus on how to use the workstation by actually producing some music. I'll use an excerpt from a piece I wrote called "Solstice" and show the process from start to finished score, while looking at some of the major features the programs offer.

SETTING UP

The KCS II is used for recording and editing your music in MIDI data format. You begin by configuring the program to fit your MIDI system. The KCS II can accept all data from the ST MIDI In port or be more discriminating and ignore selected controller data. An echo feature lets you play a master keyboard on a single channel and have the MIDI data redirected to a slave synthesizer on another channel.

Proper timing is critical for music. The KCS II lets you specify the tempo (beats per minute), meter (number of beats per measure) and timing resolution (number of internal clock steps per beat). These can be freely changed during recording or editing; audible and visible metronomes are provided while recording. You can use KCS's internal clock or the program can be slaved to an external MIDI clock source; synching to a tape machine is possible using the MIDI Song Pointer.

Three different operating modes are available with the KCS II: track, open and song. Track mode is similar to using a tape recorder. It records a single sequence using up to 48 independent simultaneous tracks, each holding data from any or all MIDI channels (see *Figure 1.*) Open mode is more powerful and lets you manipulate up to 128 sequences of different lengths. These can be started, stopped, looped for a set number of times and modified in real-time or under the control of other sequences. You can record new sequences while listening to the playback. Song mode is a restricted form of open mode where sequences are strung together, like a drum machine, and cannot overlap. Musical data can be freely exchanged between these three modes. I prefer to record sequences in track mode, then go to open mode and explore various ways of editing and structuring them to create the final composition.

RECORDING

The excerpt from "Solstice" uses only three instruments: Mirage sampler for a piano sound, Casio CZ-101 for brass section and Yamaha TX7 for a hybrid metallic string sound. I used a master keyboard to send notes and controller values ▶

Dr. T's . . .

on MIDI channel one into the KCS II and echo back to the slave synthesizers.

I first played the piano part onto track one, which sets the length of all tracks. This track replayed constantly (looped) while I added other tracks. As each new track is recorded, it joins in the playback cycle. Individual tracks can be soloed or desired track mixes can be heard by muting the remaining ones.

If you flub a part, just erase the current recording track and try again. For a blip in an otherwise good track, the problem region can be selected with the punch in/out buttons, re-recorded on another track and merged to make the correction. More sophisticated corrections can be done on the raw MIDI data itself using edit functions. For more demanding parts, a step entry feature can be used to enter note pitch, velocity and timing.

You can do some editing "on the fly" while recording or during replay. Examples of this are quantizing MIDI events to fit a time grid, deleting bad notes and altering velocities (loudness) using a volume pedal or other controller. Additional track operations are merge, delete, swap track order and shift a track forward or backward in time. The latter is great for chorus or echo effects.

I did run into one nasty bug: If you have a modem attached to your ST, turn it off when recording; otherwise if your phone rings the program crashes. This only happens when recording and not during other program operations.

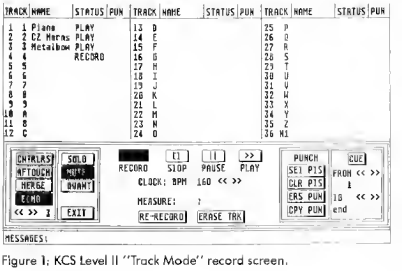


Figure 1: KCS Level II "Track Mode" record screen.

CREATIVE EDITING

The KCS II is unsurpassed in its number and richness of editing features, which you can use to correct, embellish, add, alter or just play with any of the MIDI events. You can edit almost anything on the event list; a tabulation of all MIDI activities for a given track or sequence, synched to time, appears in the edit screen. Clicking the right mouse button plays the event list, or a selected region of it, giving instant feedback on your editing.

Basic editing is done directly on the event list by changing the event values—just like a musical word processor! Many different event types are supported, representing MIDI data as well as edit and control activities. Examples of the latter are meter changes, wait for a specific time cue, increase/decrease tempo, start/stop a sequence playing and rest. The KCS II

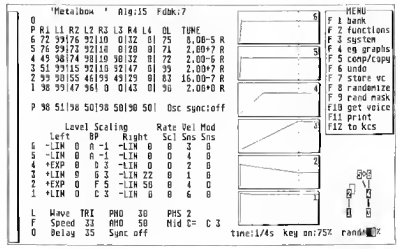


Figure 2: DX-Heaven.

recognizes polyphonic key pressure as separate from aftertouch.

You can apply edit commands to entire sequences or just a specific region, selecting them by clicking and dragging with the mouse on the event list. Common operations include cut, copy, paste, insert, delete, backup, merge tracks, append and split a track into two with respect to MIDI note number. Additional commands provide transpose or invert pitch, velocity and duration values; standardize timing; strip controller data; scale velocity (give a fade in/out effect); compress/expand overall timing; reassign MIDI channels and reverse event order (play music backwards).

The Master Editor invokes even more extensive operations. Notes in the current sequence can be selectively blended with a reference sequence according to a variety of criteria. Chord options let you collect a series of notes to be played as a chord or separate a chord into an arpeggio and play the notes on specified MIDI channels. Controller data can be thinned to decrease the MIDI data density, split out to a separate sequence or erased entirely. You can even remap pitches in a sequence—particularly useful with drum machines that use different note assignments for their sounds.

For "Solstice," I changed the event list to correct a few bad notes, added velocity scaling, adjusted the overall timing and used the Master Editor to solidify chord timings. All of that took about 15 minutes. In general, the KCS II editing functions are well implemented and easy to use, once you become familiar with the structure of the event list.

Two features I would like to see added are remapping controllers (e.g., use the modulation wheel to control stereo pan-

ning) and graphical editing of velocity and controller data for greater flexibility in adding music dynamics.

NEW SOUNDS FOR OLD

Listening to the playback, I decided to change the TX7 voice timbre. I'd set it as a string sound but now I wanted more "bite" to it to compete with the horns. Selecting EXT from the KCS II edit screen activated the MPE shell program loader and I brought in the DX Heaven patch editor program. This installed a new edit option and I could toggle back and forth between the two programs. Up to four such programs can be installed under MPE (memory permitting) and removed when no longer needed, restoring memory.

The MPE version of DX Heaven is similar to previous incarnations except it's now possible to play a KCS II sequence

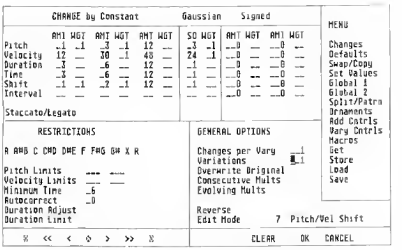


Figure 3: The Change Menu from the Programmable Variations Generator, KCS Level II.

through it. You can change patches and hear the results in context. Playback can be an entire sequence, from a cue or a highlighted region of the event list. Only the original Yamaha DX7 and compatibles are supported, not the new DX7 II or TX802.

DX Heaven has a good graphical user interface. You can store up to eight patch banks in memory and set patch parameters using an onscreen slider, the + or − keys, the mouse or just by typing the new values. Operator envelopes can be graphically edited by dragging the data points to desired new locations (see *Figure* 2.)

I used the patch editor to add a metallic edge to the TX7 string sound, something like playing a saw. Being able to playback the KCS II sequence without leaving DX Heaven let me quickly make changes and hear how they sounded with the other voices in "Solstice."

"ONE STEP BEYOND" EDITING

The PVG module in KCS II is powerful and complex enough to deserve an article on its own. Briefly, it allows for both multi-stage editing and generation of new music based on user-specified combinations of fixed rules and random chance in applying them. The rules and probabilities for a particular operation are called a preset and multiple presets can be strung together to build macros. New sequences can be built as variations on the original MIDI data or evolving chains of new variations from previous ones.

Presets can be applied to all types of MIDI data and multiple combinations of them, as shown in *Figure* 3. Various factors can be protected from change or restricted from occurring in the variations. Some simple examples are to add or vary controller effects, create chords, add swing to the timing, change the key of a sequence and create random improvisations on pitch and velocity. These barely scratch the surface of uses for the PVG!

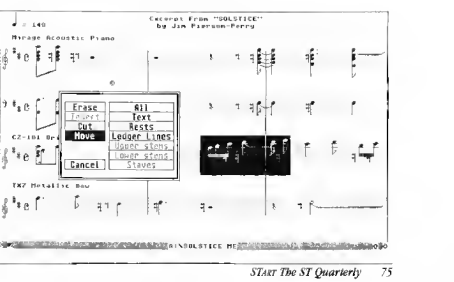
I did not use the PVG with "Solstice" but have spent hours experimenting with it. A fascinating exercise is to start with a simple phrase and repeatedly process it through a series of presets. The results can be surprisingly complex and haunting; an audio analogy of the "Life" computer game, where complex "organisms" grow from simple starting patterns.

EVEN THE SCORE

Having recorded, edited and listened to the song, it's time to transcribe the MIDI data into standard musical score format using The Copyist. Not having a Mega, I ran it as a standalone program. Only track mode files can be scored; open or song mode sequences must be copied to track mode in the KCS II. In addition, only the first 24 tracks can be read; any extras must be merged and mixed down to 24 or fewer. The program also can be used with music files in the Steinberg and MIDI sequence file standard formats.

You specify the type of clefs to be used with each individual track. Treble, alto, bass and drum clefs are supported. A track can be assigned to a single clef or split across two. The number of bars per line (1 to 8), staves per page (6 to 16), key signature and meter also are specified at this point. The next step is to enter edit mode and set various style elements for the score presentation. ▶

Figure 4: An editing screen from The Copyist.



Dr. T's . . .

Figure 5: An example score printout from The Copyist, done on an Epson printer.

Once the score appears on the page, you can edit both symbols and text. A large symbol library is available and you can define up to ten special symbols with the supplied font editor. You can use the mouse for cut/paste and positioning through the screen display; moving between pages requires keyboard commands (see *Figure 4*). New features in this version include additional dynamic markings, several text styles, slurs and guitar tablature symbols. Transcription takes note pitch and timing into consideration. Dynamics and controllers are ignored; you must add them by editing.

Draft printing to an Epson compatible can be done from the edit screen. Using the print menu option allows for high resolution output to the Epson, HP Laserjet or HP-GL compatible plotter. A page printout in draft mode takes about five minutes; high resolution mode takes about 18 minutes, a 30% speed increase over earlier versions of The Copyist. The example printout for the first page of "Solstice" in *Figure 5* shows the excellent quality you can obtain with an Epson printer.

Beyond scoring, additional options are to extract individual parts from a score and convert a score backwards into a sequencer file. Extracted parts can be for up to any clefs from the original piece and may be individually transposed and printed. When converting the score to sequence, only the notes and timing go over—all velocities are normalized.

While The Copyist can produce quality transcriptions, it's a very difficult program to use. It was ported from the IBM world and uses a large number of keyboard command sequences with only a token amount of GEM. The problem is compounded by a poor manual, making it almost an adventure game to use the program. Fortunately, a new manual has been written and should be available by the time you read this.

FINAL IMPRESSIONS

Having gone from recording to scoring, I am extremely impressed by the power and potential of Dr. T's MIDI workstation. The programs work well with each other and represent state-of-the-art performance for ST MIDI software.

The KCS II is a tremendous tool for composition and experimentation. It's not as friendly as some other programs, but is logical, once you understand the system, and efficient. A major complaint with previous versions was the manual—KCS II comes with a clearly-written manual (with a good index) in a three-ring binder. Hurrah! DX Heaven, like the others in the Caged Artist series, is an excellent patch editor that makes good use of the ST graphics and mouse.

On the down side, the MPE is fairly limited—at least with the programs currently available. I would like to run any GEM program from MPE, not just those from Dr. T, and the memory requirements to include KCS II with The Copyist are beyond the reach of most ST users. Rather than dragging entire patch editors into MPE two or three at a time, often all you need is a simple patch loader that could handle all your MIDI gear at once and be called automatically from within a sequence. Another concern is that The Copyist still needs substantial improvement on the user interface.

But even with these reservations, Dr. T has clearly delivered on his promise for "software to unleash your imagination" and flung the gauntlet down for the next round of MIDI software escalation. What a time to be a musician! ■

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Jim Pierson-Perry is a research chemist and semiprofessional musician, living in Maryland. He is a frequent contributor to START, and recently won the 1988 "Contributor of the Year" award from Antic Magazine.

PRODUCTS MENTIONED

Keyboard Controlled Sequencer Level II, $325; **DX Heaven Version 2.0**, $129; **The Copyist**, $225. Dr. T's Music Software, Inc., 220 Boylston Street, Suite 306, Chestnut Hill, MA 02167, (617) 244-6954.

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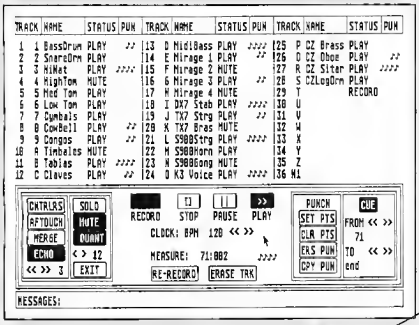
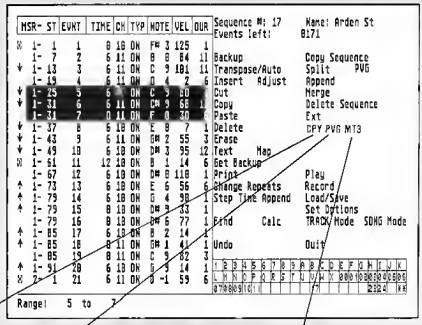
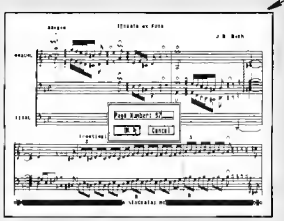


TRACK-MODE RECORD/PLAY



OPEN-MODE EDIT



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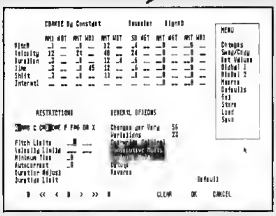
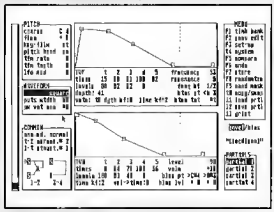


PVG



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Resourceful GFA Basic PART ONE

By John L. Hutchinson

Many programs for the Atari ST consist not only of a .PRG file but of one or more files with an .RSC filename extension. Have you ever wondered what the real purpose of these other files was, other than to confuse you? If so, sit back, relax, and prepare to be enlightened. This is the first of a three-part series that will explain what resources are, how to use a Resource Construction Set, and how to create and incorporate true AES dialog boxes in your GFA BASIC programs.

WHAT IS A RESOURCE?

The .RSC files you have encountered are known simply as resources. Essentially, they are specialized data files which contain the raw information the ST needs to create those fancy dialog and alert boxes, menu bars and icons that you have envied in many commercial programs.

There are several advantages to using resource files. For example, it is usually much easier to translate a resource-equipped program between different computers, screen resolutions, computer languages, or even human languages, than a similar non-resourced program. Programming errors are generally easier to track down and the executable program itself may be made shorter in length. The disadvantage, of course, is that with resources, a program is split into two parts, the .PRG and .RSC files, which must both be loaded for the program to function properly.

Resources have long been used by C, Pascal, and assembly language programmers to take maximum advantage of the ST's GEM-based user interface. For GFA BASIC aficionados, there's good news and bad news (isn't there always?). The bad news is that current versions of GFA BASIC don't directly support true AES dialog boxes—there is no "DIALOG" command. The good news is that you can still create and employ them; it just takes a little more effort.

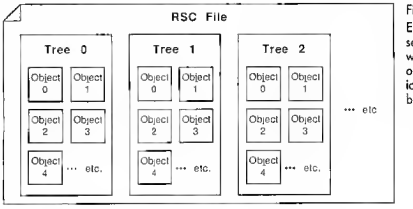

Figure 1:
Each tree represents a separate dialog box, which you can fill with objects such as text, icons, input lines or buttons.

TALKING ABOUT DIALOGS

There are actually three different ways you can incorporate dialog boxes in GFA BASIC programs. First, you can create pseudo-dialog boxes, either manually with the BOX and PBOX commands of GFA, or through the use of a separate utility such as the outstanding GFA Companion. Besides the Companion, there are a few other pubic domain versions that get the job done as well (but perhaps not as easily). The raw speed of GFA BASIC allows these graphic look-alikes to perform quite well in many applications. In spite of their relative ease of use, however, pseudo-boxes are likely to leave you yearning for increased flexibility as your programming demands expand.

Second, you can create true AES dialog boxes manually in GFA BASIC. A good example may be found in *The GFA BASIC Book*, an excellent intermediate-to-advanced tutorial by Frank Ostrowski, the author of GFA BASIC. Be forewarned, however, that while offering complete control over your application of dialog boxes, this procedure is extremely tedious and not for those lacking in patience!

The final method is the preferred choice among many developers. It involves using a separate utility known as a Resource Construction Set (RCS). There are three commercial RCS utilities commonly in use: Digital Research's RCS (which comes packaged in the Atari developer's kit), the Megamax C RCS (part of Megamax's Laser C development package), and Kuma's K-Resource RCS. All of these utilities are fully capable and similar in many respects, but I prefer the Kuma RCS—it's easy to use, has added features, and it's the least expensive of the three. ▶

All these packages suffer from somewhat skimpy documentation, so I also recommend you pick up a good reference book or two on GEM, such as the *Atari ST GEM Programmer's Reference* and *Atari ST Internals* from Abacus, the *Programmer's Guide to GEM* from Sybex, or *Compute!'s ST Technical Reference Guide*, Volumes I and II.

Besides dialog boxes, an RCS can be used to create alert boxes, menus, icons, and free strings or images. For now, though, we'll focus on dialog boxes.

RSC FILE STRUCTURE

Before delving into the mysteries of the RCS, let's take a look at how resource files are organized. A resource consists of three different kinds of components, arranged in a hierarchical fashion as shown in *Figure 1*. First is the RSC file itself, which is the final product of using an RCS utility. Within that file there are one or more forms called trees. Each tree represents a separate dialog box. These trees are numbered consecutively, beginning with an index number of zero, in the order in which they were created with the RCS utility.

Within each tree are the individual components, known as *objects*, that make up the dialog box. Like trees, objects also carry an index number. For example, *Figure 2* depicts a very simple dialog box that consists of seven objects: (0) the outlined outer box, (1) the smaller box around the title text, (2) the title text itself, (3) an editable text field, (4) a radio button, (5) another radio button and (6) an exit button.

The objects in this hypothetical dialog box have a specific and important relationship to each other. The outer box (object 0) is the *root object* of our dialog's family tree. Because the other objects are graphically positioned inside the root object, they can logically be considered as its *children* (belonging to the root object). Likewise, the title text (object 2) is a child of the small box (object 1) which, in turn, is a child of the large box (object 0) which is a parent to them all.

The important thing to remember is that all the objects within the same tree are interrelated. When you alter the root object (by changing its position on screen, for example) you will likewise affect all its subordinate (children) objects. By using pointers, the computer

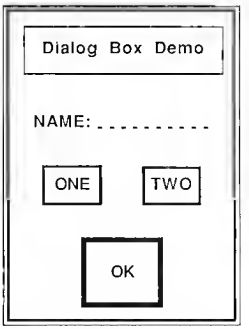

Figure 2: Example Dialog Box

uses this relationship to depict a three-dimensional tree structure via a one-dimensional list.

NEXT ISSUE. . .

Now that you've got the idea of resource trees, we're ready to put one together. Next time around, we'll use the Kuma K-Resource RCS to build a dialog box similar to the one in our example. Then we will wrap up the series with a sample program that demonstrates the code necessary to incorporate the box in a GFA BASIC program. So stay tuned . . . and you too can learn to be resourceful. ■

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Major John Hutchinson is an Operations Research/Systems Analyst for the Army, an Atari user since 1975 and co-founder of the Fort Leavenworth Atari Group.

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Dynamic New Technology Opens Up New Career Opportunities for You

The opportunities are unlimited for the person who's trained to take advantage of today's electronic music phenomenon. Now you can prepare for a high-paying career as a studio technician, sound engineer, recording engineer, or road technician . . . even start your own new-age business providing one-stop sales and service for musicians, technicians, and general consumers alike. Or simply unleash your own musical creativity with the breakthrough training and equipment only NRI gives you.

Only NRI Gives You an Atari ST Computer, Casio Synthesizer, and Innovative MIDI Software You Train With and Keep

The Atari ST Series computer included in your course becomes the heart of your own computer-controlled music center. With its tremendous power, superior graphics capabilities, and built-in MIDI interface, the 16/32-bit Atari ST has almost overnight become the computer of choice for today's most knowledgeable electronic musicians.

The Casio CZ101 digital synthesizer, also included in your training, is the perfect complement to your Atari ST. The polyphonic, multitimbral CZ101—which stores up to 32 voices internally—"communicates" with your ST computer through MIDI, bringing life to virtually any sound you can imagine.

Plus, you get ingeniously designed MIDI software that opens up amazing new creative and technical possibilities . . . you actually build your own 4-input audio mixer/amplifier . . . and you test the electronic circuits at the core of today's new-tech equipment with the hand-held digital multimeter included in your course.

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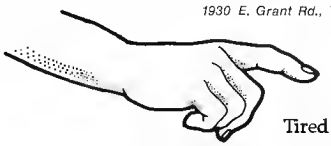

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Price:	Free	Free	$89.95	$99.00	$89.95	$79.95	$79.95	$99.95
Disk or cartridge based:	disk	disk	disk	disk	disk or cartridge	disk	disk	disk
Execution style								
Interpreter or compiler:	interpreter	interpreter	compiler	compiler	interpreter	interpreter	compiler	inline compiler
access to commands in immediate mode:	all	all	no	no	all	limited	no	limited
run-only package:	no	no	no	yes	yes	yes	no	no
license for compiled programs:	no	no	no	$25 one-time fee	no	no	no	no
Programming style								
line-oriented or structured:	line	line	both	structured	both	structured	structured	both
multiple commands per line:	yes	yes	yes	yes	yes	no	no	no
saves programs as ASCII files:	yes	yes	yes	yes	yes	yes	yes	yes
renumber:	no	no	no	no	no	no	no	yes
Trace command:	yes	yes	no	no	yes	yes	no	no
error handling:	line entry run-time	line entry run-time	compile run-time	compile run-time	run-time	line entry run-time	compile run-time	compile run-time
Microsoft Basic compatible:	yes	yes	yes	no	no	yes	yes	no
Editor								
line, full screen or windows:	window	window	external	external	window	full screen	external	window
function keys:	yes	yes	n/a	n/a	yes	yes	n/a	yes
on-screen menus:	drop-down	drop-down	n/a	n/a	drop-down	fixed	n/a	drop-down
Access to ST features								
GEM access:	low-level	low-level	high-level	low-level	high-level	some high-level	some high-level	low-level
windows:	yes	yes	yes	no	yes	yes	yes	yes
joystick:	no	no	no	no	no	no	no	no
music/sound:	yes	yes	yes	no	yes	yes	yes	yes
function keys:	yes	yes	yes	yes	yes	yes	yes	yes
machine language routines:	yes	yes	yes	yes	yes	yes	yes	yes
easy access to I/O ports:	yes	yes	yes	no	yes	yes	yes	no
sprites:	no	no	no	no	no	yes	yes	no
monochrome and color:	yes	yes	yes	yes	yes	yes	yes	yes
Math, string and disk functions								
numeric variable types:	integers reals	integers reals	integers reals doubles	integers reals structures	integers reals doubles	integers reals	integers reals	reals
trig functions:	radians only	radians only	radians only	radians only	radians (with degree conversion)	radians only	radians only	radians or degrees
2-D strings and string handling:	yes	yes	yes	yes	yes	yes	yes	yes
store data in strings:	yes	yes	yes	yes	yes	yes	yes	yes
print entire character set (8-bit ASCII):	yes	yes	yes	yes	no	no	no	yes
easy access to disk files:	yes	yes	yes	yes	yes	yes	yes	yes

START CHART

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Subroutines and user-defined functions								
call subroutine by label:	no	yes	yes	yes	yes	yes	yes	yes
pass parameters to subroutine:	no	no	procedures	no	procedures	yes	yes	yes
local variables for subroutine:	no	no	procedures	no	procedures	yes	yes	yes
user-defined functions:	yes	yes	yes	no	yes	yes	yes	yes
Support								
documentation:	manual	manual	manual	manual	manual quick-ref card	manual	manual	manuals
other books:	yes	no	yes	no	no	yes	yes	no
telephone support:	no	no	no	no	no	yes	yes	no
online support:	yes	yes	no	no	yes	yes	yes	no
upgrades:	no	no	yes	no	yes	yes	yes	no

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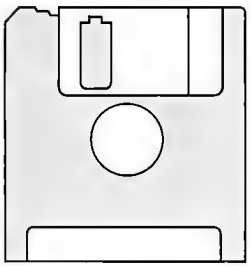

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COMING

IN SPECIAL ISSUE NUMBER 4 OF

START,

THE ST QUARTERLY

ST Games and Entertainment!

It's the dog days of summer . . . you sit in front of the fan looking at the spreadsheet on your ST monitor while the perspiration rolls down your back. You just don't feel like crunching numbers or processing words.

How about playing a game on your ST instead?

In the next issue of START:

- Dave Plotkin tells how "Power Without the Price" translates into great computer gaming and which ST games to buy.
- Chess master Chris Chabris delves into Saitek's revolutionary Chessbase, the only chess database anywhere.
- Conqueror of the Dark Lord Heidi Brumbaugh leads you on a tour of the darkest recesses of FTL's Dungeon Master.
- Jim Pierson-Perry takes Sonicflight's new MIDI software out for a test hop.
- Jan Paul Moorhead makes his own kind of MIDI music with "M."

And on the jam-packed START disk:

- Sink your computer with a wonderful graphic version of the classic Battleship game by GFA wizard John L. Hutchinson.
- Play hot licks on your ST with Guitar Solo.
- Get ready for school—and have fun doing it—with Discovery USA.
- Let Dave Small help you check the speed of your floppy disk drive.
- Fix that glitched file with William Schneider's unique file checker and editor.
- And still more on the disk than this space allows!

Don't miss this next issue of START! We'll have all this plus advice for new hard drive owners, more GFA BASIC and Cyber Studio tips, news, reviews, letters and features. It's all on sale in the first week of August!

CIRCLE 040 ON READER SERVICE CARD

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CIRCLE 017 ON READER SERVICE CARD

Summer Fun Is Where You Find It

By Gregg Pearlman

If you think that CompuServe is just for electronic mail, news and financial information, then you haven't spent much time online. There really is a fun, entertaining side that isn't limited to downloading files with names like, oh, TIFFANY.PIC.

The idea of "online" fun might conjure up visions of adventure games, but there's much more than that on CompuServe—although if you *really* seek adventure games, you won't be disappointed. Just type GO ADVENT, which will bring up a menu featuring British Legends, CastleQuest, Flying Buffalo, House of Banshi, Original Adventure, New Adventure and Scott Adams Adventures—the latter a blast from Atari's 8-bit past. Many interactive online games are for multiple players, and the player interaction adds more variety than in a one-player game.

Typing GO FRPGAM brings you to the Fantasy Role-Playing Games forum, where you'll find such online classics as BlackDragon, Castle Telengard and Island of Kesmai. For a different type of role-playing game, just GO FOOTBALL for a sophisticated sports simulation. Typing GO CSW brings you to the Computer Sports World, featuring bookmakers' statistics for football, basketball, baseball, hockey and soccer.

And to talk with others about the games, there's the Gamers' Forum, featuring The Electronic Gamer, an online magazine full of reviews, newsletters and game walk-throughs. (Of course, even with a printout of a walk-through in front of him, one editorial staff member of Antic Publishing—we're not saying who—*still* couldn't finish "The Hitchhiker's Guide To The Galaxy.")

If you're more interested in a word-search game, type GO BAFFLE—in fact, for any of several brain-teasing games, the Board/Parlor Games area includes astrological and biorhythm charting, The Casino (a multi-player blackjack game), Hangman and Interactive Chess.

ARE THE STARS OUT TONIGHT?

For those cosmically inclined, you can get horoscopes online. When you type GO ASTROL, you need enter only your time, date and place of birth, the time zone in effect at the time, and optional information such as Morinus, Regiomontanus, Porphyry, Equal and Campanus systems. This horoscope chart gives you all sorts of information decipherable only by those well-versed in this sort of thing, such as your ruling planets and the relative positions of the planets at the time you were born.

And if the stars in the sky don't interest you, perhaps the stars in Hollywood will. Type GO HHL for the Hollywood Hotline (which carries a $6 per hour surcharge for daily entertainment news), a Showbiz Trivia Quiz, product information and more, including more "Movie Reviewettes" than you can shake a stick at. In fact, without the Hollywood Hotline, we might never have known about the return of "My Sister Sam" to the CBS lineup or Dorothy Lyman of "Mama's Family" appearing on "ALF," or about Donald Trump buying 24.9% of MCA, Inc. (Universal Pictures).

GO HUMAN

For adult information and, let's be honest, entertainment—you can type GO HUMAN, which brings you to CompuServe's largest online magazine, the Human Sexuality Forum (HSF). The HSF has online transcripts, questions and answers, support groups, an index and more; to be perfectly blunt, there's something for many different tastes. Sexual issues are discussed in a straightforward, mature manner, although the answers occasionally seem self-evident ("What should I do if my child asks to watch my spouse and me in an intimate moment?" "Say 'no,'" state the experts. I don't think you need a degree in child psychology to figure *that* one out.)

For related pleasures of the flesh, you can always GO IO to get to Inside Outside Lingerie, which is an online catalog of intimate clothing. This might then prompt you to try GO FISHNET—but it isn't what you think. It really takes you to the Aquaria/Fish Forum. The Aquaria forum has several message boards, data libraries and conference channels for those who enjoy tropical fish.

▶

YOU DON'T NEED MUCH HIGH-Q

But if you think you're too smart for all this, then GO TMC for an IQ test (TMC means The Multiple Choice). You'll be given several short, timed quizzes encompassing general knowledge and a bit of math. Later, the test will flash numbers from three to nine characters on your screen, and you'll have to type them in as you saw them—in the second part of this section, you type the digits in reverse order. Then you get the standard analogies test, such as "INSOUCIANT is to WILDEBEEST as EMBOLIC is to: (a.) POCKET LINT (b.) STEGOSAURUS (c.) FENCEPOST or (d.) STYPTIC." This is the hard part. Last comes the famous quotations—in code. Simple substitution helps you decipher the famous sayings. At this point you're given an IQ "score" and told what it means.

The TMC area also has quizzes such as "So You Think You Know Me!," a two-player test, "Personality Profile," which requires honesty on your part, and a "Touch-Type Tutor."

So all in all, CompuServe provides plenty of areas where you can kill an idle hour and have fun doing it. The only drawback, of course, is the connect charge, but then that's *always* the drawback. ■

If you'd like to see more articles like this, circle 175 on the Reader Service Card.

Gregg Pearlman is Assistant Editor of Antic.

SERVICES MENTIONED

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CIRCLE 176 ON READER SERVICE CARD

Small Tools from pg. 67

TWISTER.ARC and ARCX.TTP to a fresh disk, double-click on ARCX.TTP, type TWISTER.ARC and press the Return key, and in no time you'll have the new Twister on your disk, ready to use.

As you'll see in the source code, we didn't have to make major changes. A new piece of code looks for the ROM identifying stamp, then directs the Twister routines to the proper memory location.

Using Twister remains the same as before: it simply works on Megas as well as on regular STs. Boot in medium or high res, and double click on TWISTER.PRG. Click on the drive you'd like to format, and how many sides you'd like formatted. Go away while the drive does its thing. Afterwards, it will tell you how the format went. Thereafter, any floppy access to the Twister-formatted floppy will be *very* quick.

Any access to a Twister-formatted floppy will be very quick.

COMING ATTRACTIONS

Next issue, we'll take a look at how fast your drives are spinning—and why it's important. ■

If you'd like to see more articles like this, circle 184 on the Reader Service Card.

Dave Small is the creator of the Magic Sac Macintosh emulator and the Translator One disk controller, and the author of three books and many computer articles. Dan Moore is the author of PaperClip for the 8-bit Atari computers.

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If you want even more information, programs and reviews for your Atari ST, check out every monthly issue of **Antic Magazine**. Inside you'll find **The ST Resource**, a special section featuring news, product announcements, hardware and software reviews, and type-in programs especially for the ST owner. Every month it's the fastest way to keep up with what's going on in the ST world! To subscribe to **Antic**—or for a special subscription offer on both **Antic** and **Start, The #1 Guide to the Atari ST**—see the subscription card in this issue!

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CIRCLE 045 ON READER SERVICE CARD

Tracker, Gone Fish'n, Star Trek and Marble Madness

By David Plotkin

Summer.

The sun is hot, glowing gold, and you're probably thinking more of softball and soaking up some vitamin D rather than sitting indoors at your computer. But too much sun isn't good for you, you have to do *something* with your nights, and summer's the time for fun. And computer fun means computer games.

This issue we'll take a look at some games with outstanding graphics—although nice graphics don't necessarily guarantee good gameplay, as you'll see. For this issue we have a space adventure, an Earth-based simulation, an action-packed first-person game and, sigh, a not-great version of an arcade classic.

TRACKER

Tracker is a unique strategy/arcade game from Rainbird, the company that brought you Starglider, and the heritage shows. In Tracker, the heroine of Starglider journeys to the planet Egron to compete in the deadly game of "Tracker." Syndicated on the Egron networks, Tracker's advertising revenues are used to finance the war effort against the Novenia. And by the way, nobody has ever survived "Tracker."

Each contestant receives six skimmers, each equipped with shields and weapons. Your mission is to destroy the huge computer called "Centrepoint," which lies at the center of a vast network of intersecting tracks. The network is split into seven hexagonal sections, with communications links joining them and a communication center in each section. You must fly your skimmers through the network, destroying both attacking enemy ships and the communications links. If you destroy the latter, you can obtain the Quark bomb necessary to destroy a communication center. Destroy this and you'll get a Neutron bomb, the only weapon effective against the Centrepoint computer.

Tracker is divided into two main sections. The first is the arcade sequence, where you search and destroy *everything*—the enemy ships, and communications links and centers. When an enemy approaches, an alert sounds, and you begin your attack, aiming with your mouse cursor and firing with the left mouse button. You also control your flight with the mouse, changing your velocity by moving the mouse pointer up and down while holding down the right mouse button. It's tricky navigating the winding trackways, especially at high speed, so it's best to zip down a track and let the autopilot get you to the next intersection. At the intersections are "nodes," the only places you can change direction.

Strategy plays an important part in Tracker's second major section. The network of tracks is huge, and a straight-in

Tracker, Firebird Licensees' strategy/arcade game. In Tracker you must destroy the huge Centrepoint computer.

approach to Centrepoint will just get you overwhelmed by enemy craft. Read the novella that comes with the game carefully for hints on how to win, and use your superior speed to outrun your enemies instead of slugging it out.

Tracker is completely mouse-driven, and its controls are easy to learn, with onscreen buttons to control all your actions. You may have all six of your skimmers moving at once, although this isn't wise; several might be attacked simultaneously, and it's almost impossible to defend yourself under these circumstances. I recommend just controlling one skimmer and leaving the others in "safe" zones until you need them.

The game has other nifty features, such as long- and short-range scanners that show the track network. Clicking on the "combat" button replaces the long range-scan with a 3-D, out-the-cockpit view, which you use when you're battling an enemy, flying down tracks or changing directions. Tracker's ability to load and save games also is welcome, since a complete game can take quite a while to play.

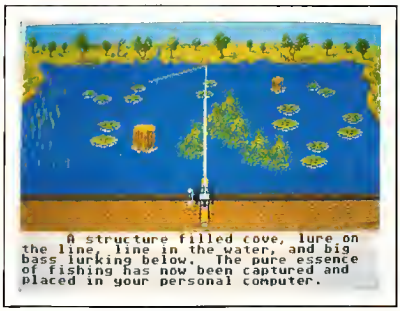
Tracker combines excellent simulated 3-D, action and strategy into an enjoyable contest. You must be willing to invest some time to play a good game, and be prepared to lose several games before you discover how to destroy Centrepoint.

GONE FISH'N

Gone Fish'n is—no joke—a bass fishing simulation. It's also one of those head-scratchers that makes you ask, "Why was this put on a computer?" After all, real fishing means sitting in a canoe, slapping at deerflies, snapping turtles chomping your bait, getting roasted by the sun. Sort of tough to duplicate on a computer.

Well, it can't beat the real thing, but Gone Fish'n is actually a pretty fun game.

You play it in stages. Your first screen is the weather report, where you see the coming forecast: sunny, cloudy, or raining, the predicted fishing opportunities (good, fair, or poor), and temperature trends for each day of the current week.



Gone Fish'n, a bass-fishing simulation from Interstel. It can't beat the real thing, but it's a pretty fun game.

You may choose to fish or work on a particular day; each day you fish and skip work costs you money (as in real life!) You may also check the fishing tournament results for the previous week, and even enter a three-day tournament to win prize money.

Gone Fish'n is—no joke—a bass fishing simulation. It's also a pretty fun game.

Once you've selected your fishing days, you appear in your kitchen the morning of your first fishing day. From here you may tune in an accurate weather report for that day, check the map to see the eight fishing lakes in the area, call the lake to get a fishing report and check your game status. To fish at a particular lake, you must have enough money to pay the boat rental fees unless you own a boat. You may also choose to visit the tackle shop, where you can pick up lures, tools or even a boat, if you have enough money. The tackle shop has a variety of lures, all thoroughly explained in the manual.

Once you arrive at the lake, you climb in the boat and motor out to where you want to fish. Guiding the boat is a little tricky since you use the mouse to control speed and direction. Your boat has two motors: the gasoline one is noisy and fast, but your electric trolling motor is quiet—use it as you near your fishing spot. Then, drop anchor, put a lure on your hook and cast your line. You can reel your line back in slow or fast; a side view of your line shows how deep your lure is running and fish as they come in for a strike. As a fish strikes, set your hook by holding down the right button and jerking the mouse back at exactly the right time, ▸

then either reel the fish in (small fish) or play it to tire it out (big fish). If the fish is big enough, it may run for quite a while, and you'll hear your line being pulled out of the reel. The methods of playing and reeling in a fish are a little tricky, but well explained in the manual. Periodically you can check your Live Well (the cooler where you keep your fish) to see your progress.

At the end of the day you go home. If you have fishing days left that week, the next screen will put you back in your kitchen at the start of the next fishing day. If that's it for the week, you can choose when you want to fish the following week.

Gone Fish'n's graphics are good (the shoreline view changes depending on which direction you cast) although somewhat static. Sound is almost nonexistent, save for an occasional mosquito or bird. The manual is fine, although it never explained the term "pumping it in." The second half of the manual has some fishing background that has little to do with the game but it does make for enjoyable reading. I'm not sure why this game was put on the computer, but it's fun to play and easy to learn.

STAR TREK: THE REBEL UNIVERSE

Star Trek: The Rebel Universe is Simon and Schuster's first piece of ST software, and it's a winner.

Star Trek: The Rebel Universe (hereafter Trek) is a role-playing game that uses the settings and characters of the original "Trek" series. All the familiar faces are there—Kirk, Spock, Sulu, Chekhov, Scotty, McCoy and Uhuru. Your mission is to enter an area of space known as the "Quarantine Zone," where Klingons have been taking over Federation planets and starships with a "psimitter," a mind control device. The Enterprise is immune from its influence, but you'll still have to figure out how to disable the device and thwart the Klingon plot.

Star Trek: The Rebel Universe. Based on the original series, this role-playing game lets you battle the Klingons.

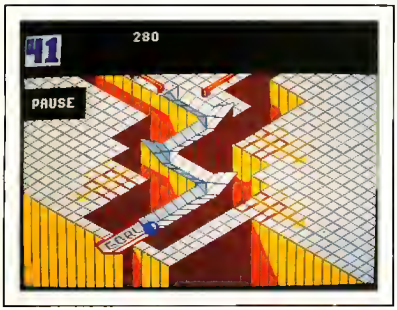
All of the Enterprise's controls are available through the bridge crew. Each person on the bridge has separate responsibilities, and you can call up any person by clicking on him or her with the mouse pointer. If you want something analyzed, click on Spock; for ship navigation, select Sulu; and for weapons, select Chekhov. Clicking on some of the bridge crew brings up several different screens, each of which you can select with the mouse. If this sounds complicated, it isn't: the controls are actually easy to master and very intuitive.

To complete your mission successfully, you must navigate the Enterprise through the area of space that's fallen to the Klingons. Navigation takes some practice, since you must choose which magnification of space you want to use in the navigation globe (some solar systems are not visible unless you choose a highly magnified view). Once you get the hang of it, set your course and speed and warp on over. A different screen controls which planet to go to after you arrive at a particular solar system.

Another fairly complicated function to master is weapons control. One screen lets you select phaser banks, the other selects photon torpedoes. You must then switch screens to choose a target, switch screens again to lock onto the enemy, then fire and hope for a hit!

There are many different planets in this game, most of which contain objects necessary for you to complete your mission. As you encounter these objects, keep track of where you found them and what they turn out to be useful for. Stay away from Klingon solar systems until you've located some objects to help you, especially repair facilities (this Enterprise doesn't seem to have any shields!).

If a planet can support human life, you may beam down a landing party. At this point, Trek becomes more like a conventional adventure game. Your landing party will encounter obstacles they must deal with, and you must choose from the suggestions of the cap-



Marble Madness, Electronic Arts' rendition of the coin-op classic. Unfortunately, the ST version doesn't live up to its potential.

tain and any crewmembers in the landing party on how to deal with those obstacles. Choose wrong and you may end up as one of the injured. If you fail to bring along the crew member whose suggestion will work, you may need to beam back up to the Enterprise, get him or her, then beam back down again.

Star Trek: The Rebel Universe is based on the original TV series.

Trek's sound and graphics are very good; the crew members are well-rendered and the digitized sound lends an air of realism. Trek's best trait is that it gives you many different ways to win. Once you've figured out how to achieve one of the goals, you can try to win the game a different way. The ability to load and save games (eight on each disk) also is handy, since it can take quite a long time to play a complete game.

The manual is also very good, detailing instructions, hints, a list of items you might find and what they are good for, and the ways of winning. There are even photographs from the original TV series and a description of beaming down to a planet to pick up something very useful. If you're tired of earth-bound role-playing games, then I highly recommend Star Trek: The Rebel Universe to you.

MARBLE MADNESS

Marble Madness for the ST should have been very good—the Amiga version certainly is. But something was lost in the translation to the Atari ST, and the result is a disappointing game which is frustrating to play.

In Marble Madness, you control a marble that rolls down a series of colorful "tracks" or paths, while trying to avoid animated obstacles, waves, troughs and other features designed to make "marble driving" difficult. The object is to control the marble from the starting point to the ending point of each course, and not fall off the paths. If you let the marble roll off the edge, you waste precious time, which is the real enemy in this game. When the time's up, the game is over. You may use the mouse or joystick to control the marble.

My biggest complaint with Marble Madness is that its controls are *extremely* difficult to master. I simply couldn't get acceptable control over the marble's motions—it seemed sluggish and unresponsive, no matter if I used a joystick or mouse. Further, the marble often hung over what appeared to be empty space without falling—an additional frustration. With perseverance, I could finally manhandle the marble with some degree of control, and I *did* see some of the upper screens. But it was a lot of effort to control the marble—too, much, I'm afraid, to recommend the game. Pity. ■

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Dave Plotkin is a chemical engineer with Chevron U.S.A., and is a frequent contributor to START and Antic.

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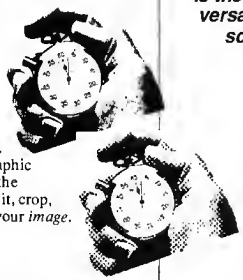

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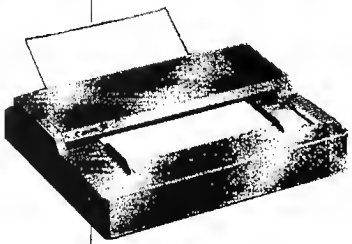

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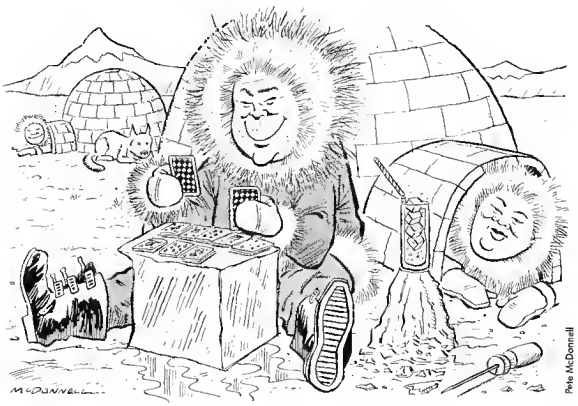
North To Alaska

START's Klondike Solitaire Game

by Rob Lech



Pete McDonnell

Computer card games come and go, but now START brings you the classic solitaire game—guaranteed to keep you playing and playing again! Boot up your color monitor in low resolution for hours of relaxation with START Klondike—the ultimate ST solitaire game. ▸

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North To Alaska. . .

Summertime is when most people relax a bit, put their feet up and while away the hours. There's nothing like sitting out on the veranda in peace with a tall lemonade and a deck of cards, just playing solitaire as the sun arcs across the blue sky. But if you don't have a veranda or can't find that deck of cards the kids were playing with last winter, fire up your ST and play START Klondike. You'll find it every bit as enjoyable and addictive as it is with the pasteboards.

Up until a few months ago, I also used a deck of cards whenever I wanted to play a game of solitaire. But after a few games, I realized that the ST could not only save time shuffling, but could also keep all the cards straight and off my lap. All I had to do then was to write the program. . .

Klondike, also called Canfield, is a classic solitaire game with a long history. Because of its popularity over the decades, Klondike has many rules variations. For START Klondike, I chose the most commonly used set of rules outside of Reno, Las Vegas and Atlantic City. To achieve the look and feel of a real card game, START Klondike runs in low resolution on a color monitor only.

THE TABLEAU

In START Klondike, your ST deals seven stacks of cards beginning from the left every time you click on the GAME button. On the left is one card face up. The second stack has two cards, one face up and the other face down under it. The third has three cards with two of the three face down, and so on so that the stack on the far right has six cards face down and one face up. The rest of the cards forms the pack. This set-up is called the tableau. If you don't like the way your hand looks, just click on the GAME button again to redeal.

The object of Klondike is to build four suit piles from ace to king. If you have an ace face up in the tableau when you start a game, you can start its suit pile immediately by placing it onto the matching location at the bottom of the screen. You may play the next card in order onto a suit pile of the same suit. For example, you may play the two of diamonds onto the ace of diamonds and the three of diamonds onto the two of diamonds, but not a heart onto a diamond.

PLAYING YOUR CARDS RIGHT

To play or move a card in START Klondike, move the mouse pointer inside the outline of the card you want to move and hold down the left mouse button. The card can then be dragged to wherever you want to play it. Before you release the mouse button, make sure that the upper left corner of the card is *inside* the outline of the spot you want to place the card. START Klondike will not let you make an illegal move.

To uncover the cards in the stacks, you have to play them on other cards or on the suit piles. You can move a card onto another card in the tableau *only* if it's of the opposite color and a number *one less* than the card you're playing it on. In other words, you can play a red seven on a black eight, a black queen on a red king and so on. The king is the highest in a suit and the ace the lowest.

OF KINGS AND SPLITS. . .

As you move a card or column from a stack and lay it down in its new spot, START Klondike automatically turns over the next card in the stack. The width of the grey borders on the stacks will give you an idea of how many cards there are in a stack. When you have turned over all of the cards in a stack, you will have an open stack with your green tabletop where the stack was. If you want to, you can move a king–and only a king–into an open stack from the turn pile or another stack.

If you have a column of cards on a stack and the top one can be played on another card, put the mouse cursor inside the outline of the top card and drag it (and the whole stack) onto its new location. All of the cards in the column will follow. Also, START Klondike allows you to split stacks by moving a part of a stack onto another if the top card of the portion you're moving can be played on the other stack. This can be very handy to uncover a card to play on a suit pile.

START Klondike.

LEADER OF THE PACK

After you have played all of the cards you can play from the deal, click the left mouse button on the pack in the lower left corner of the screen. This will turn over the top three cards from the pack, but you will only be able to see the top one of the three in the turn pile next to the pack. You can play any card in the turn pile just as if it were on the table. Playing a card from the turn pile will reveal the next card below it. Playing or discarding three cards in a row from the turn pile will reveal the last card you turned. When you have played all of

the cards in the pack, click again in the green space where the pack was and START Klondike will flip the pack over and start back through it again.

If you get stuck so that you can't play any card on the board or the turn pile, you've lost that hand. Just click on the GAME button again and you will have a fresh hand to play.

PROGRAMMING HINTS

The most useful portion of the Klondike source code is the subroutine that draws the playing cards. Draw_card(x,y,c) displays a 35 x 39 pixel playing card of value "c" where the screen coordinates of the upper leftcorner are "x" and "y". If the card value is zero, a card will be erased (i.e. a 35 x 39 rectangle will be drawn and filled with the background color). If the card value is 1-52, a playing card will be displayed. Hearts are numbered 1-13, clubs 4-26, diamonds 27-39, and spades 40-52. Card values of 53 and 54 will display the back of a card and the outline of a card, respectively.

Card_out is unique in the sense that it doesn't simply index into an array of data and blast out a card. It actually builds the card using suit symbols and colors. This technique, although more complicated, has rather modest data requirements. The required data and brief comments can be found in the file DATI.S.

Draw_out can be altered to meet the requirements of almost any card-type application you might have in mind. It should be altered in one very important aspect. The visual organization of ST Klondike required that the display of stacked cards end at y = 154 to leave room at the bottom of the screen for the pack, turn and suit piles. This was accomplished by clipping GEM primitives and altering the display of raster forms. To remove or alter this restriction, pay careful attention tothe "vs_clip" calls upon entry and exit and to the testing of y > 154.

I hope you enjoy playing START Klondike. For me, it was a challenge to write the most efficient card game I could. If you are a programmer, look at the source code for the method I used to draw the cards. I think you'll find it useful. ■

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Rob Lech and his partner, Troy Dahlam, are experienced games programmers. Together they wrote Joust and the soon-to-be-released Centipede for the ST.

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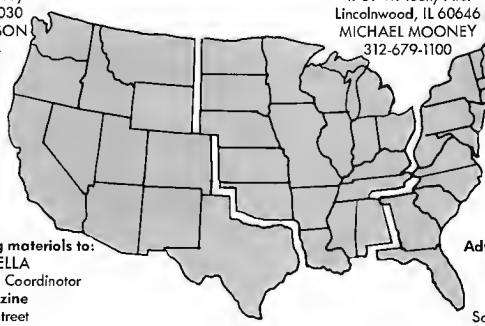

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ONLY $79.95

Word Processing for people who have more creativity than time.

Have you ever wished there was an easier way to show everyone the ideas in your mind? If so, then let us give you several reasons why WordUp can broaden your ability to express yourself, by thinking more *like you do*.

First of all, you'd probably like to add the visual impact of pictures and charts to your papers. No problem! With WordUp you can place and size pictures from popular paint programs anywhere on the page and the text will automatically flow around them. Also, as you make changes, pictures stay with the text you wanted them to be with.

Wouldn't it be nice to always see what the printout is going to look like? No problem! In WordUp, everything from line justification to the different sizes and types of characters you use are shown on the screen as they will appear on the printed page. Even footnotes are now easily added and edited on screen just as they will appear when printed.

Tired of being restricted to the same old built-in printer fonts? No problem! In WordUp, you can use any size or types of characters on the same line. In fact, we bet you've seen some really nice Macintosh fonts that you'd like to use on your Atari ST and MEGA. No problem! Now, with our new program FONTZ! ($34.95), you can use those character sets, and ones created for the Amiga, Degas Elite, and Hippoword with WordUp or the many other programs that use GEM fonts. Also, FONTZ! easily creates new character sizes for your screen and printer. And what if you need a special character that is not supplied with WordUp? No problem! You and FONTZ! can make a quick change to a character set or whip up an entirely new one from scratch. FONTZ! even helps you design logos and access them with a single keystroke.

You're probably wondering whether WordUp has the power to handle your more complex word processing needs. No problem! WordUp has all the features you expect and more, like: *full GEM interface with multiple windows • cut and paste • glossary & mail merge • spell checker & thesaurus support • master pages • multiple character styles • left, center & right line justification • separate formatting for document, section & paragraph • automatic reformatting • automatic word wrap & pagination • variable line spacing • variable superscript & subscript • search & replace • disk operations • menu & keyboard commands • left-right-center & decimal tabs • draft printing • flexible page-date & time enumeration • Ascii text importing and exporting • variable page size • configurable • reasonable upgrade policy • programming pipeline for added versatility... and more.*

WordUp

Word processing for those of us who need more than just words to express ourselves!

Available Now!

NEOCEPT

908 Camino dos Rios, Thousand Oaks, CA 91360
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microdeal *brings you two more exciting games for your Atari ST!!*

Leatherneck

Become the Commando Warrior, a champion for all that is noble, entrenched in a game of skill and survival as you try to rescue your captured comrades from the corrupt legions of the Evil Empire. Slash and blast your way through the jungle and into the Enemy Command Complex. Attack alone, or side by side with your most trusted and intrepid comrade. There is even an adapter available that lets you attach two more joysticks, allowing up to four Commandos to participate at the same time. Imagine yourself and three friends as the formidable four, an elite squad of fighters battling together for right, truth and justice. Leatherneck, the game that allows you to experience real teamwork in defeating a common enemy. (For all Atari ST Computers)

Color Only...$39.95

Tanglewood

Uncle Arthur is in another predicament and needs your help. You have 10 days to regain the stolen documents that (he claims) give him sole mining rights to an inscrutable (but potentially rich) planet called Tanglewood. Equipped with five computer controlled mobiles (in various states of disrepair) you scour the lush Tanglian landscape in search of clues that will unravel the secrets of this strange planet, its people, and their perplexing rituals. Your travels will take you (via your mobiles) from the blurry bottom of the lakes, and the dark caverns of the mines, to the snarled labyrinth of the tree tops. Over 700k of graphics make this a vivid journey of challenge and discovery. (For all Atari ST Computers)

Color Only...$39.95

For more information on these or other programs, ask for our latest catalog!

576 S. Telegraph
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Dealer inquires welcome.
Visa and Matercard accepted.

CIRCLE 030 ON READER SERVICE CARD

THE CATALOG™

ONE PASS

The "Cyber" Line Goes Pro...

...with Cyber Paint Computer Animation!

Introducing...

Our Cover: At One-Pass Video, in San Francisco, the Cyber Desktop Video software rubs elbows with the likes of Ampex, Dubner and Wavefront. One-Pass Video is the largest video post-production and computer graphics facility in northern California. Their credits include TV commercials for Apple, Chevron, Purina, and Frito-Lay, plus MTV music videos, TV specials, and award winning footage for the CBS Evening News.

Although the end resolution and limited colors of the Atari ST can't possibly compete with the Dubner or the Wavefront, Cyber products offer a viable alternative to traditional storyboard techniques. Customers can quickly (and inexpensively) demonstrate graphics and animation concepts using CYBER STUDIO, CYBER PAINT, and SPECTRUM 512. These concepts are later converted to the larger machines. Plus, CYBER SCULPT is used to create the actual 3D models which are ported (via FLASH) to the One Pass Video supercomputer and rendered in 16 million colors.

The low-cost alternative of Cyber conceptualization is being discovered by other graphic-intensive businesses, such as Lucasfilm, Paramount Pictures, General Dynamics, Rockwell, Polaroid, and many university computer and film departments throughout the country.

Our Customer Service department fields hundreds of questions daily — many about our Cyber family of products. Those of you new to our product line (or those silently wondering) may find the following helpful:

WHAT DOES 'CYBER' MEAN?

When you see the word *Cyber* in front of any of our products, you know that product is somehow related to computer *animation*. (That's why SPECTRUM 512 doesn't include the word Cyber.) The root of the word cyber is *to pilot*. Cyber software is your pilot through a new universe: Cyberspace.

WHAT IS 'DESKTOP VIDEO'?

Well, desktop *publishing* is the application of low-cost micros in the professional publishing business. Desktop video is the next logical step: using the microcomputer to create professional, and economical, video displays.

MY GRAPHICS LOOK GREAT ON MY ST, WHY PUT THEM ON VIDEOTAPE?

For one thing, animations take memory. Record your animations onto videotape (using your VCR alone or with CYBER VCR), and you can get *hours* of graphics rather than minutes. Also, more people own VCR's than own ST's (over 40,000,000 versus under 200,000). Your completed videotape can be mailed to practically anyone; only an Atari owner can look at your disk.

WHAT DO I NEED TO PUT MY ATARI GRAPHICS ON VIDEOTAPE?

Video graphics are simply a recording of what is displayed on your monitor. However, the RGB output of your computer must be converted to an acceptable signal for your VCR. Many 520ST's have built-in RF modulators — plug a special monitor cable or Monitor Master into those 520's and you've got the composite signal you'll need. But since most Atari's don't have composite output, an RGB-to-composite converter is required. Call Practical Solutions (602-884-9612) for all of the above. Or, you can use the JRI Genlock (415-458-9577) which lets you blend video images with computer images and produces a true RS-170 NTSC signal.

I WANT TO GET INTO DESKTOP VIDEO, BUT, RIGHT NOW, I CAN ONLY AFFORD ONE PROGRAM. WHICH PROGRAM SHOULD I GET FIRST?

Depends on your interest. If you like 3D graphics, begin with CYBER STUDIO and CYBER CONTROL. Anyone with a craving for animation should start with CYBER PAINT. And those who want the best art tools available will find them in SPECTRUM 512. The following chart will help:

Goal	Product
2D static or true color graphics	SPECTRUM 512
3D static graphics	CYBER STUDIO
3D animated graphics	CYBER STUDIO & CYBER CONTROL
2D & 3D, animated or static graphics	CYBER PAINT

DO YOU PUBLISH ANYTHING BESIDES GRAPHICS PRODUCTS?

Absolutely! Take a look at our products from page 12 on. We publish FLASH, the most popular terminal program on the ST, as well as several related telecommunications programs. (Be sure and check out SHADOW, our new multitasking file-transfer program.) Our educational software — such as GENESIS, the 3D Molecular Modeler, or MAPS AND LEGENDS — are sophisticated for a broad age range, yet extremely easy to use. According to our customers, PHA$AR is the best home financial package for your ST, and be sure and read about our new MACRO MOUSE utility. We even offer the only collection of stereoscopic computer games.

CYBER SCULPT™
The 3D Modeling Tool™

by Tom Hudson STEROTEK

When Tom Hudson wrote CAD-3D 2.0 for the CYBER STUDIO (ST0236), memory limitations confined him to two basic object-modeling tools: Spin and Extrude. And, when combined with the ability to join objects, these tools offered (and still offer) variety and flexibility.

But Tom knew of more sophisticated object-modeling tools on high-end workstations — such as the Iris or Sun. He figured the best way to fit all those bells and whistles in one meg of ST RAM was to design a program that does just one thing — builds three-dimensional objects. And not just spun or extruded, but twisted, pushed, pulled, tweaked, and pummeled. The most fantastic shapes imagineable.

Skew, Twist, and Bend

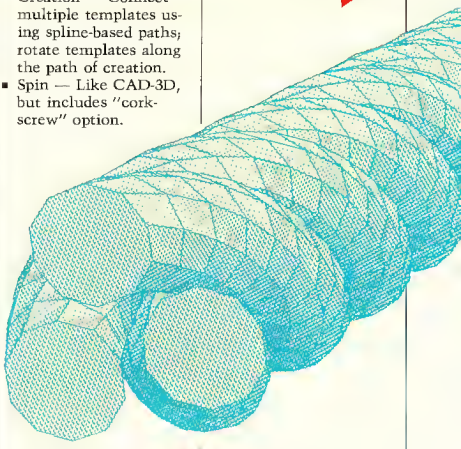
Tom's new program is called CYBER SCULPT. It's mouse-controlled, stand-alone, and a lot of fun to use. If CAD-3D object creation is like working with wood, CYBER SCULPT object creation is like working with *clay*. Don't like the shape of that object? Grab some vertices, and drag them into a better position. Or move a *magnet* over your object and watch the vertices stretch toward it. Skew, twist or bend objects into incredible shapes.

CYBER SCULPT includes cross-sectional modeling for shapes like boat hulls, or dimensional topography. And, for you engineers, we include optional manual data entry, and support for the more popular digitizing tablets.

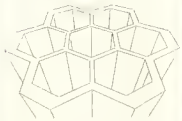
Take a look at these features:

- Object Distortion — Skew (diagonal shear), bend (to any angle), and twist (along user-defined axis).
- Vertex Pulling — Distort by direct vertex manipulation.
- "Magnet" — Stretch selected vertices based on distance from magnet.
- Cross-sectional Model Creation — Connect multiple templates using spline-based paths; rotate templates along the path of creation.
- Spin — Like CAD-3D, but includes "corkscrew" option.

New!



- Complex Extrude — Single-template extrusion with optional end-capping, spline-controlled twist, and spline-controlled extrusion path.



- Variable-magnification work window — see and manipulate entire model or just a small part.

All 50 states 6AM-6PM PACIFIC TIME
Monday-Friday MasterCard, VISA Only

- Face Beveling
- Manual Face Coloring — "Paint" object's faces with specific colors.
- 3D Mirroring — Create half the model, then mirror it to make the other half.
- 2D Template Toolkit:
  - Spline interpolation of points with user-defined smoothness.
  - Point mirroring, scaling, dragging, cloning.
  - n-face automatic polygon creation.
  - Arc generation.
- 3D primitives: Cubes, Prisms, Spheres, Hemispheres, Cones, Cylinders, Tubes, Discs.
- 2D/3D coordinate display.
- Raster tracing — convert 2D pictures into 3D objects.
- Isometric projection view window.

CYBER SCULPT
ST0255 **Available in July**
REQUIRES One-megabyte RAM

"Antic's CAD-3D is one of the best programs I've seen for the Atari or anything else."
— Jerry Pournelle, **Byte Magazine**

THE CYBER STUDIO™
Featuring CAD-3D 2.0

Works with all ST paint programs, and the CYBER family.

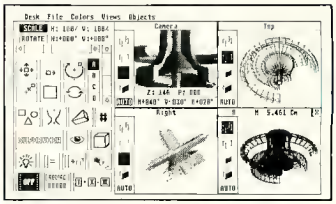
Tom Hudson's STEREO CAD-3D 2.0
Hidden within your Atari ST is a professional 3D workstation. A 3D solid-modeling design system that is intuitive — yet powerful enough for professional artists, advertising agencies, or design firms.

Design and *walk through* your dream house with CAD-3D 2.0. Programmers use our system for dimensional tasks like flight-simulator scenic design; artists create accurate perspective foundations for their DEGAS or NeoChrome pictures; engineers find CAD-3D 2.0 the perfect sketchpad for conceptual design; and VCR owners use the CYBER STUDIO to create 3D titles and cartoons for home videos.

Plus, we made version 2.0 an open-architecture system, so that any programmer can easily write custom applications for CAD-3D 2.0 that run as desk accessories: motion control choreography (CYBER CONTROL), advanced rendering (ray tracing, texture mapping, finite element analysis, custom modeling tools... There's no limit. CAD-3D 2.0 will *never* become obsolete.

Let your creativity soar with all these new features:
- Icon control panel — fast, intuitive interface
- All new, DEGAS-style color design system permits custom-color lines, edges and backgrounds, plus multi-colored objects
- *Real-time* display mode for instant response (uses 3D math developed by Jez San for Starglider)
- Supports (optional) STEREOTEK 3D glasses (TH9020) for true 3D viewing

Mark Kimball's CYBERMATE™
The CAD-3D Animation/Editing language
CYBERMATE is a "post-production" animation editing language that gives you control over:



- Dimensioning (feet/inches or meters/centimeters)
- Graphic lighting control — drag 3 lights anywhere
- GDOS output supports laser and dot matrix printers
- User-selectable pivot points for articulated rotations
- Enhanced Spin, Extrude, and Join tools
- Load DEGAS pics into CAD-3D background

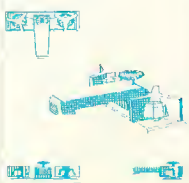
Starglider™ Firebird Software
DEGAS™ Batteries Included
Generic CADD 2.0™ Generic Software

- Sequence looping, cuts, fades & dissolves
- Color cycling animation
- Sound effects (created with the G.I.S.T. editor, on pg. 22)
- Title generation and text display

THE CYBER STUDIO STEREO CAD-3D 2.0 plus CYBERMATE (2-disk set)
ST0236 $89.95
REQUIRES: one-megabyte RAM
Upgrade from CAD-3D 1.0 for only $60 (plus original disk and $5 shipping)

The Original...

Tom Hudson's CAD-3D™ 1.0
520ST-compatible



If you have 512K of RAM and are interested in computer graphics, many of the features of CAD-3D 2.0 are included in this original version—even a basic animation system.
CAD-3D 1.0
ST0214 ~~$79.95~~
REQUIRES: 512K RAM
Now! $29.95

"A remarkably powerful modeling system."— **Computer Graphics World**

CYBER CONTROL™1.1

The CAD-3D Motion Control Language

by Tom Hudson SIERRA ON-LINE

CYBER CONTROL is the CAD-3D Motion Control Language — a desk accessory programming language, with built-in GEM text editor. When you want to simulate a real event with articulated life-like animation, plug in to CYBER CONTROL.

CYBER CONTROL is an animation scripting language that locks in to CAD-3D 2.0, controls all of its functions, and magnifies its already powerful capabilities. Whether you're a hobbyist or a scientist, you can create animated 3D models in a single afternoon. Simulate particle physics; 3D animation for entertainment or education; 3D financial analysis; animated, fully dimensional math models; event reconstruction of P.I. litigation, human factors engineering. . . you name it!

Now, you can write code to control any feature of CAD-3D 2.0—plus powerful features not in CAD-3D 2.0! But let's let Tom describe it:

As CAD-3D 2.0 grew into a powerful animation system, I realized that truly complex animations would require a scripting language for proper control. I purposely designed CYBER CONTROL as a BASIC-like language so anyone could pick it up quickly.

When activated in CAD-3D 2.0, CYBER CONTROL takes over full control of all functions, creating and manipulating objects, lights, and cameras (three different ones). Its primary use is as a cinematic motion-control script language, but its flexible nature makes it an ideal "front-end" for CAD-3D to let you write your own BASIC-like programs that use CAD-3D as a "graphic engine"!

Features include:

- Two new cameras! Now, move your camera *anywhere* in the CAD-3D universe — fly *through* your scenes!
- Real-time animation preview mode!
- Hierarchical Connectivity. Attach objects to each other for fluid, connected movement — walking skeletons, or hinged mechanisms.
- Smooth, 3D spline generation:
  - Move cameras along realistic flight paths
  - Apply natural movements to articulated models
  - Build new types of models (coils, fractals, etc.)
- Layer foreground and background images for cel animation.

Plus advanced power:

- FOR/NEXT for full Loop control; Conditional IF/THEN; GOSUB/RETURN.
- Labels instead of line numbers
- Numeric expression handling; *floating point*; logical AND and OR; parenthesized expressions; function library including sine, cosine, tangent, square root, and more!
- Up to 128 user-defined, alphanumeric variables, significant to 8 characters! Hardcopy Print statement for debugging.

I hope you enjoy CYBER CONTROL. Your ST can automatically *create animations that would take you* days to *complete — in a matter of hours. Start the program and walk away, as your computer does all the work!*

— Tom Hudson

CYBER CONTROL
ST0250 $59.95
REQUIRES: CYBER STUDIO (ST0236)

3D PLOTTER & PRINTER DRIVERS™

Supports Hewlett-Packard pen plotters (and compatibles); plus screen-dump drivers for Gemini/Star, Epson, Okidata, IBM, Color, NEC, Panasonic, C-Itoh dot-matrix printers.

PLOTTER DRIVERS
ST0225 $24.95
REQUIRES: CAD-3D 1.0, or CYBER STUDIO

The programmer's interface to CAD-3D!

3D DEVELOPER'S DISK

For CYBER STUDIO

by Tom Hudson

Works with most popular ST C's plus assembly language

If you are a programmer with some experience in C, you can unlock the deepest secrets of Tom Hudson's code. He purposely left a special desk accessory "pipeline" to his program so CAD-3D would never become obsolete. Tom himself used this pipeline to create CYBER CONTROL, and now *you* can use it to create your own 3D programs.

In the 3D DEVELOPER'S DISK, Tom clearly explains to programmers and developers how to access the pipeline. Included on the disk are complete descriptions of the CAD-3D object-file formats, full-featured source and object code examples, as well as detailed instructions by Tom Hudson showing you how to hook into CAD-3D 2.0. Create your own 3D applications — with no knowledge of 3D math. (No licensing fee required.)

3D DEVELOPER'S DISK
ST0244 $29.95
REQUIRES: CYBER STUDIO (ST0236)

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Produce Your Own Cyber Video!

CYBER VCR™

New!

The Video Connection

by Tom Hudson

Now that you've created your library of Cyber animations, it's time to tie the whole thing together — on videotape! CYBER VCR is a video sequencer that automatically links your Cyber animations into a professionally edited videotape up to four hours long. And the whole thing is mouse controlled, so it's a cinch to use. In fact, we'll describe it right here.

Plug the special umbilical cable (included with CYBER VCR) between a compatible Sony VCR (listed below) and the printer port of your Atari ST. Run CYBER VCR and a chart of columns and rows will appear. Click on any row, select your Cyber animation from the file selector—it's now listed on the screen chart.

Drag your titles into any order with the mouse — or clone them if you wish your animation to appear more than once. With any animation listed, you may set its start frame, stop frame, number of cycles and cycle mode (forward or ping pong), and playback speed.

Animations may be spliced seamlessly on tape because of Sony's flying erase bead. Or, you may fade in or out from black or white — at variable rates. Or you can use one of the many custom graphic wipes from the library on your CYBER VCR disk. And if you can't find the wipe you want, create your own wipes with CYBER PAINT!

Only one more thing to do: click the Record button on the CYBER VCR screen, then sit back and relax. CYBER VCR will take over, controlling every function of the Sony recorder. All the buttons on the deck are duplicated on the CYBER VCR screen; it can even eject the cassette! In no time at all, a professionally edited videotape of computer graphics is ready to show to clients, friends, or family — and they won't need an ST to view it!

CYBER VCR
ST0257 $69.9S
REQUIRES: One-megabyte RAM; animations created by CYBER STUDIO or CYBER PAINT; one of the following Sony VCR models: **Beta HF750 or HF1000; 8mm EVC8U; Camcorder CCD-V8, CCD-V8AFU, CCD-V9, CCD-V110.** *Note: All future Sony models will include the necessary 5-pin remote jack required by CYBER VCR.*

ALSO REQUIRES: You must also have some way of sending a composite video signal into the "video in" port of the Sony VCR (either with a 520ST, Video Key, or Genlock).

JOIN THE CYBER FAMILY!

Don't forget to send in your warranty cards when you buy Cyber sofrware. It's the only way to join our Cyber Family. Receive upgrade information, special offers, and our new Cyber Newsletter. It's all for you, but only if you become a registered owner of Cyber software.

All 50 states 6AM-6PM PACIFIC TIME
Monday-Friday MasterCard, VISA Only

3D-FONTS II™

New!

by Doug Thomas

Spectacular new fonts plus a potpourri of 3D clip art. Includes 4S computer-style all-cap, 4S gothic upper/lower-case, 2-color gothic all-cap, and 2-color serif all-cap. These fonts are beautiful! Imagine the CYBER animation titles you can create with these. Packed disk also includes 19 multicolor decorative objects including face masks, comer pieces, stars, etc. Dress up your 3D world with this fabulous clip art.

3D-FONTS II
ST02S4 $29.9S
REQUIRES: CAD-3D 1.0, or CYBER STUDIO

3D-FONTS I™

by Tom Hudson
Works with CAD-3D 1.0 and CYBER STUDIO

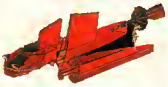
This first 3D FONT package contains over 2S0K of serif and sans-serif letters. Design your own 3D greeting cards, signs, logos, and letterheads. *Special Bonus Program:* Tom Hudson's color SUPER EXTRUDER *TOOL*, written by Tom to create these fonts. Design your own fonts, or create new kinds of complex, *multicolored 3D objects* (such as those seen in the 3D DESIGN DISKS) that can't be built with CAD-3D alone.

3D-FONTS I
ST0224 $29.9S
REQUIRES: CAD-3D 1.0, or CYBER STUDIO

3D DESIGN DISKS

FUTURE DESIGN DISK™

by Darrel Anderson



Get a fast start on your three-dimensional explorations with the CAD-3D FUTURE DESIGN DISK. Everything you need to create spacecraft, stations, bases, vehicles, robots and androids. Model your future then populate it with androids and CAD-People. Bring it to life with CYBER CONTROL; detail it with any popular paint program. Includes:

- Blueprints
- Complete models
- Component parts
- Construction tips

FUTURE DESIGN DISK
ST0232 $29.95
REQUIRES: CAD-3D 1.0, or CYBER STUDIO

ARCHITECTURAL DESIGN DISK™

by Darrel Anderson

Create CAD-3D renderings of your Dream House or build an entire CAD-3D City from the ground up. Component parts including: Doors, Windows, Arches, Roofs, Walls, Stairways, and a wide variety of architectural accoutrements. Create your own CAD structures and populate them with HUMAN DESIGN figures. Build "sets" for your animated Cybermovies. NOTE: The ARCHITECTURAL DESIGN DISK can be used to visualize and render real-world architecture. It is not intended for use as an architectural engineering tool. Includes:

- Blueprints
- Complete models
- Design tips

ARCHITECTURAL DESIGN DISK I
ST0243 $29.95
REQUIRES: CAD-3D 1.0, or CYBER STUDIO

HUMAN DESIGN DISK™

by Richard Berry

Populate the CAD-3D Universe. Bring to life your CAD-3D creations with the HUMAN DESIGN DISK. Amazingly accurate modular male and female skeletal anatomy forms are included. Detailed head and hands add realism. Modify your figures to create the infinite variety of the human form, pose your figures, detail the images with any popular paint program, or bring them to life with the CYBER CONTROL Animation System. Includes:

- Blueprints
- Tips on the dynamics of human anatomy.

HUMAN DESIGN DISK
ST0242 $29.95
REQUIRES: CAD-3D 1.0 or CYBER STUDIO

CARTOON DESIGN DISK™

New!

by Maurice Molyneaux and Andy Eddy

And now for something completely different — 3D cartoon characters! Plus, an entirely new approach in design disks. You get not only a collection of wonderful 3D comic characters, but specially designed CYBER CONTROL programs to animate them. *You* decide which way the heads turn, where the eyes look, how fast they move (or fly), then let CYBER CONTROL bring them to life — automatically. Disk includes: complete articulated characters, hierarchically designed for use with CYBER CONTROL; a library of "parts" to modify existing characters — or to build your own; detailed documentation describing how to use the many files on disk, how to modify your characters, character creation, animation techniques, and even how to *videotape* your animations.

CARTOON DESIGN DISK
ST0256 $29.95
REQUIRES: CYBER STUDIO (CYBER CONTROL for animations)

VIDEO TITLING DESIGN DISK™

by Andy Eddy and Maurice Molyneaux

New!

Add that professional touch to your videos with spectacular, animated titles. The VIDEO TITLING DESIGN DISK includes an entire 3D font, plus 3D objects designed specifically for titling effects. Custom, easy-to-use CYBER CONTROL programs let you animate your 3D titles, create credit sequences, etc. ADO f/x files are included to add complex ADO moves with CYBER PAINT. Plus, sample graphic files demonstrate advanced ADO techniques. Documentation includes all necessary instructions, plus a discussion of effective video planning and effects, a description of the equipment needed to tape your computer output, plus tips on getting professional results.

VIDEO TITLING DESIGN DISK
ST0261 $29.95
REQUIRES: CYBER STUDIO (CYBER CONTROL for animations; CYBER PAINT for ADO f/x)

CYBER PAINT™ Version 2.0

Pro Animation Studio

New!

by Jim Kent

Three animation programs in one — a time-oriented paint program, a "cel" animation program, and a digital optical printer. If you were a professional video director and wanted a machine to do to video what CYBER PAINT does to Atari graphics, you'd have two choices — either an Abakus A62 DDR (digital disk recorder), or a Quantel Harry. Either cost approximately $200,000.

Time Painting

CYBER PAINT has all the standard paint tools — Box, Brush, Rubber Line, Fill, etc. — then adds *the dimension of time*. For example, in the standard paint-program cut-and-paste operation, you cut your image out from one area of the screen then paste it to another. In CYBER PAINT, you cut your image out of frame *#1*, move it, then paste it over any range of frames. When you play your animation, the pasted image floats smoothly from the first position to the last.

In a standard paint program, you load a single picture. Of course you can do this in CYBER PAINT — or you can load an entire 3D CYBER STUDIO animation, and touch it up with CYBER PAINT's time tools.

Cel Animation

Classic movie animations were painted, frame by frame, on celluloid — or "cels." CYBER PAINT adds the power of the computer to this technique. The mouse-operated Frame Slider Bar instantly accesses any frame (cel). Auto-"blueing" prints a ghost image of your previous changes to subsequent frames, making registration of step-through animation a breeze.

CYBER PAINT's unique *compositing* system lets you overlay or underlay almost any type of graphics file — load a 200-frame 3D CYBER STUDIO animation, underlay a DEGAS background to frames #1 to #100, a NeoChrome picture to frames #101 to 200, overlay a converted Aegis Animator script to frames #26 to #115 ... The combinations are endless.

3 frames of CYBER STUDIO animation before CYBER PAINT

The same 3 frames after a CYBER PAINT touch-up

Digital Optical Printing

We've saved the best for last. You've seen this TV special effect on everything from rock videos to the evening news. Titles and images spin and glide around the screen like magic carpets. We call it ADO f/x (Antic Digital Omnimover effects).

Clip any part of your picture and you're ready to fly! Drag the Turn bar setting to 2 turns, then instantly preview the effect. Click to change the axis — or adjust all three axes; the clipped image now spins and twists in place. Even draw a curving path for the twisting, image to follow. CYBER PAINT is the fastest possible way to create professional looking animations.

Works with all ST paint programs, plus CYBER STUDIO (ST0236).

All new! Version 2.0

Jim's added so many new features we haven't space to list them all. But here's a preview:

- All new Color menu:
  - Palette change per frame
  - Cut & Paste color range
- Color f/x menu:
  - Fade over time
  - Blend over time
  - Cycle over time
- Pixel f/x menu:
  - True antialias
  - Pixel shatter
  - Reduce to edges
  - Outline (neon effect)
- Separate many colors
- Automatic traveling mask — normal, inverse, XOR
- Splice Load & Reverse Save
- Paste Under
- Playback frame segment
- View frame in ADO

CYBER PAINT
ST0251 $79.95
(Upgrade $25 plus original disk)
REQUIRES: One-megabyte RAM & color monitor

The New Standard in Paint Programs

SPECTRUM 512™

The Omni-color Paint Program

by Trio Engineering

Digitized entirely with DigiSpec & Computereyes

It didn't take long. Since its premiere last October, SPECTRUM 512 has already become the paint program standard for the Atari ST. Easy to see why: 512 colors that you don't have to jump through hoops to use. Just pick a color from the palette of S12, and draw with it — anywhere on screen. Or cut a block from any picture and paste it to any other picture; don't worry about matching palettes, all colors are available anytime!

Engineering at 617 964-1673 and ask about SPECTRUM S12 accessories, including DigiSpec, which creates full-color SPECTRUM S12 pictures using the ComputerEyes digitizer.)

SPECTRUM S12 is more than 24,389 colors. It's a collection of the most sophisticated graphic paint tools available on any microcomputer. When you own SPECTRUM S12, you own a professional system unlimited in its possibilities.

"Drops" by Richard Berry

More colors means higher *perceived* resolution. Anti-aliasing replaces ugly "staircase" lines with smooth, delicate curves. Multiple dithering combinations simulate a palette of 24,389 colors for creamy smooth gradient fills, or photo-realistic digitized color pictures — SPECTRUM 512 loads Amiga HAM pictures. (Call Trio

Here are just some of your tools!

Drawing:

- Freehand
- Rubber Line, French Curve, Polygon, Circle/Ellipse (all with no jaggies mode)
- Fill—patterned or solid
- Fill New—fill over any existing patterns or colors!
- Patterns— 20 predefined, 20 user-defined
- Brush
  - 38 shapes — solid or patterned
  - User-definable brushes
  - Auto-align patterns, or pixel offset for overlap
- Adjustable Airbrush
- Sophisticated color RGB search and replace, local/global

Anti-aliasing:

- Zag-Out anti-aliasing, or Blur defocusing
  - Full screen
  - Local box
  - Brush
- No Zag—Anti-aliasing and auto-curve for:
  - Lines
  - Polygons
  - Circles

Colors:

- Select colors from S12-color Main, or User-defined palettes
- Save and load custom palettes
- Auto-create color range
- Color cycle Brush or Airbrush
- Fantastic Color Edit mode includes:
  - Search and replace colors
  - Add or subtract RGB values
  - Add or subtract luminence
  - All Color Edits global or local, one or more colors
- Magnify window, all tools active
- 12-screen scrollable cut & paste buffer (1-meg)
- Load CYBER, DEGAS, or NEO pictures
- Programmable slide-show program supports Spectrum S12 animation and Stereotek 3D glasses

SPECTRUM 512
ST0249 $69.95

REQUIRES: Color monitor. 520ST's built before 12/85 may require $30 MMU chip upgrade from auth. serv. center.

DEGAS™ Electronic Arts
NeoChrome™ Atari Corp.
ComputerEyes™ Digital Vision

All 50 states 6AM-6PM PACIFIC TIME
Monday-Friday MasterCard, VISA Only

THE CYBER GALLERY

Since last October, when we released CYBER PAINT, CYBER CONTROL, and SPECTRUM 512, we've gotten a lot of requests for graphic demos. Here on these pages is the most bang we can muster for your demo buck.

HOLO CONTEST I

HOLO CONTEST II

CYBERMATION VIDEOTAPE
Here it is! The videotape that shows what can *really* be done with the Cyber family —and *how to do it*. Created by Tri-Vision, this tape contains our best demos to date, and a marvellous tutorial about how *all* of the Cyber products work. VHS and 8mm format — *don't miss it.*
VHS0002

CAD-3D COLLECTION I
Original collection of CAD-3D objects created by Tom Hudson. *(SS,M,.5)*
PD9088

CYBERSCAPE SB0104
The original *tour de force* Cyber animation by Darrel Anderson. *(DS,C,1)*

CAD-3D COLLECTION II
Complex CAD-3D objects, featuring Space Shuttle, 2 lighters, Atari logo, etc. *(SS,M,.5)*
PD9101

CAD-3D COLLECTION III
The latest complex CAD-3D objects, featuring trumpet, grand piano, bicycle, etc. Packed disk includes sample objects created with CYBER SCULPT. *(SS,M,.5)*
PD9103

CYBER DEMOS I
Features the Human Design Disk skeleton doing a back flip, plus more demos of CYBER CONTROL's capabilities. *(DS,C,1)*
PD9104

CYBER DEMOS II
Amazing demo of *texture mapping*, plus examples of advanced CYBER PAINT techniques. *(DS,C,1)*
PD9108

CYBER DEMOS III
Real-time sequences digitized with Supra View into Cyber Paint, plus many more Cyber animations. *(DS,C,1)*
PD9106

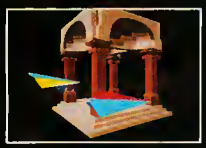
SPECTRUM S12 DIGIPIX
This packed disk contains our best collection of beautiful digitized Spectrum pics, including the woman in this issue's ad. *(SS,C,.5)*
PD9107

SPECTRUM SLIDESHOW
The original slideshow disk, featuring Ellen and Laserbee by Darrel Anderson, and more! *(SS,C,.5)*
PD9100

SPECTRUM PORTFOLIO
Darrel Anderson and Richard Berry collaborate for a brilliant demonstration of Spectrum S12's fine art capabilities. *(SS,C,.5)*
SB9108

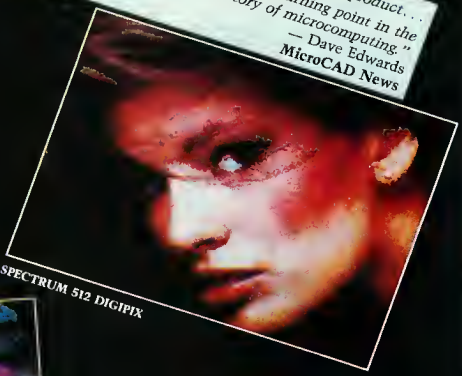
STEREO STEELYBOINK
If you own a pair of Stereotek 3D glasses, you've got to see this demonstration of animated ray tracing on the ST by Tom Hudson. *(DS,C,.5)*
PD9098

CYBER DEMOS I

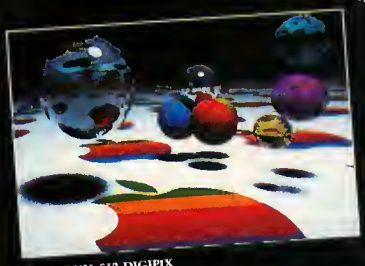


CYBER DEMOS II

"The (Cyber) system is a pioneering product . . . a turning point in the history of microcomputing."
— Dave Edwards
MicroCAD News



SPECTRUM 512 DIGIPIX



SPECTRUM 512 DIGIPIX

SPECTRUM PORTFOLIO

STEREO STARS/SLIDES
Float through stereo space with the Stereotek 3D glasses and this hypnotic starfield. Plus, over ten full-stereo slide pictures. *(DS,C,.5)*
PD9099

HOLO CONTEST I
One of our favorite entries in the CYBER CONTROL Hologram contest: the dark peace of an ancient temple is broken by the majestic visit of an advanced race! Contest winner, Dann Parks of KTEH TV (San Jose, CA) demonstrates how to simulate realistic object dynamics with a simple, six-line CYBER CONTROL subroutine. The .CTL code is included with the animation. Watch out Steven Spielberg! *(DS,C,1)*
PD9109

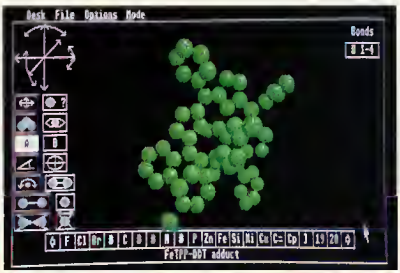
HOLO CONTEST II
Soaring bird to roaring spaceship, while mechanical walker treads nearby. For FLYNIGHT.SEQ, contest winners Paul Dana and Robert Mills have actually created a desk accessory that creates moving starfields for CYBER CONTROL animations automatically. If you own CYBER CONTROL, you have got to have this disk! Also includes hierarchical motion examples. *(DS,C,1)*
PD9120

HOLO CONTEST III
A flat plain becomes a living, breathing mountainous region in CREATION.SEQ. Contest winner Dan Reifsnyder wrote a topographic contour-mapping program that turns DEGAS Elite/CYBER PAINT pictures into 3D contour-map object files that you can load into CAD-3D. Program plus animation included on disk. *(DS,C,1)*
PD9121

NOTE: All products on this page are in the public domain and may be freely distributed. All disks are $12.00; CYBER VIDEOTAPE is $24.95. All programs are self running, with the exception of the three CAD-3D COLLECTION disks, which require CYBER STUDIO or CAD-3D 1.0. Note also the requirements for each product before ordering:
SS = single sided disk,
DS = double sided disk,
C = Color,
M = Mono or Color,
1 = 1 megabyte RAM,
.5 = 1/2 megabyte RAM.

GENESIS™
The 3D Molecular Modeler

by Scott Legrand



The atoms of life... carbon... nitrogen... hydrogen... oxygen... phosphorus...

This is the stuff we're made of. But until now, only research scientists in large universities could actually *image* the building blocks of matter.

Imagine creating the basic elements yourself, then watching as they come to life. And with a pair of STEREOTEK glasses, this miraculous process unfolds in 3D stereoscopic depth.

Using GENESIS and your mouse, you can:

- load and display amino acids, hydrocarbons, and sugars
- create your own molecules onscreen
- output your molecules as CAD-3D objects, or as DEGAS/NeoChrome pictures
- Explore X-ray Crystallography

Rotate 3D molecules on any axis — X, Y, or Z, using real-time control. In *stereo*, hexagonal carbon rings and delicate fingers of hydrogen burst right out of your monitor.

With two molecules onscreen, you may create your own rules for molecular bonding, then animate the chemical reaction between them.

GENESIS offers the same type of iconic control panel and intuitive human interface pioneered on the Atari ST with CYBER STUDIO (ST0236).

Three different display modes for every imaging need:

1) STEREOTEK LCS glasses
2) Red/blue anaglyphic glasses
3) No-glasses (monoscopic)

And with data provided on the program disk, you can create virtually any known molecule using the on-line periodic table of elements.

GENESIS
ST0239 $79.95
REQUIRES: One-megabyte RAM

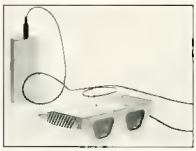
True stereoscopic 3D graphics for your Atari ST

STEREOTEK™ 3D GLASSES

By LC Technologies

Put on the STEREOTEK glasses and jump into a new universe. Discover a magical world that you always knew existed. That *extra* dimension — **depth**. Now you can add depth to your computer graphics with STEREOTEK Liquid Crystal glasses. Solid, realistic 3D images you want to reach out and touch. Your STEREOTEK depth-view system includes:

- One pair electronic Liquid Crystal Shutter glasses with six-foot cable (can be comfortably worn over eyeglasses)



- ST cartridge interface unit — supports six sets of glasses (additional glasses optional)
- DEGAS Elite Stereo Desk Accessory
- Stereo CAD-3D animation and stereo slide show by Tom Hudson
- For programmers: Complete developer's instructions plus source code for adding stereo to your own programs (C or GFA BASIC)

Model Tomahawk 118 Used

The secret to full-color stereo images on a computer screen is electronic Liquid Crystal Shutter (LCS) glasses. Two optical shutters in eyeglass frames are connected electronically to the ST. Every time the ST screen refreshes (60Hz/color, 70hz/mono) one shutter closes and the other opens. The monitor displays alternating right and left eye views synchronized with the shutters. The alternating views appear faster than the eye can see, and your brain translates the normally flat monitor image into one of startlingly realistic deptb.

STEREOTEK 3D SYSTEM
TH9020 $149.95
ADD-ON GLASSES ONLY
TH9021 $99.95
Satisfaction guaranteed or your Money Back! (during 30-day warranty period)
LC Technologies is a venture of Tektronix, Inc.

ORDER TOLL FREE (800)234-7001

800

All 50 states 6AM-6PM PACIFIC TIME
Monday-Friday MasterCard, VISA Only

A new perspective in Arcade Action!

SHOOT THE MOON™

STEREOTEK REQUIRED

3D Alien Invaders

by Mountain Fresh Software

SHOOT THE MOON is a colorful, high-speed shoot-em-up in the classic arcade tradition, with fabulous animation, original sounds, and one big difference — *stereo.* The floating aliens menace you from multi-depth levels as you maneuver your ship beneath them, find the right depth level, and pulverize them.

And, for those who want their traditional arcade games to remain completely traditional, you can play SHOOT THE MOON in 2D without the glasses. The game play is just different enough to make it a whole new challenge. Master the double-dimension version before moving on to the STEREOTEK universe, or, if you already have STEREOTEK glasses, master both versions — if you can!

SHOOT THE MOON
ST0252 $39.95
REQUIRES: Color Monitor

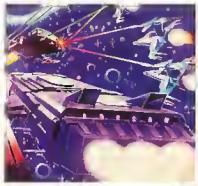
LCS WANDERER™

STEREOTEK REQUIRED

Deep space has never been so real!

by Pyramide Software

The first ST game designed for full-depth stereo. Written in France, but set in outer space, this stunning arcade adventure transports you through galactic Space sectors, Black holes, and Limbo. Startlingly realistic, stereo point-of-view animation puts you in the cockpit as you swoop and dive through star fields while dodging enemy aircraft.



LCS WANDERER is really several games in one. Journey from dogfights in the space sectors, to interstellar poker strategies, from Battlezone-style planetary sectors, to the stereo tunnel of the black holes.

The liquid crystal clarity of the STEREOTEK glasses transforms LCS WANDERER into a multi-colored micro universe within your monitor. Includes a completely redesigned solid-surface cockpit, full color displays, and reduced eye fatigue compared to the original red/blue version.

LCS WANDERER
ST0238 $39.95
REQUIRES: Color monitor and STEREOTEK Glasses
Battlezone™ Atari Corp.

The latest STEREO game is here!

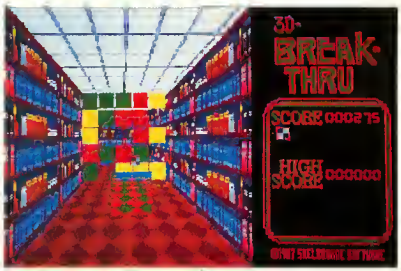
STEREOTEK REQUIRED

New!

3D BREAK-THRU™

Point-of-View Handball

by Shelbourne Software



Trapped! Hopelessly trapped in yet another ghostly corridor of this haunted three-dimensional labyrinth. And *there,* way down there at the far end of the hallway — the dreaded tri-level, multi-color, phasic-vulnerable brick wall that seals my doom!

But wait — can it be? YES! Gliding directly toward me (in full stereoscopic depth), the friendly form of a brindle-bagshaw bent-english Brick Buster. If I can but deflect it with my personal, porous poly-paddle & Missile Mit (which I have nicknamed Phyllis), Brick Buster will rebound down the corridor and bust one brick (for the wall is, as previously mentioned, phasic-vulnerable).

Okay, stereo fans, it's the latest real-time dimensional challenge for the optically adventurous. Hook up your STEREOTEK glasses and bust out of this multi-level, point-of-view game. At the far end of each corridor is a brick wall sealing off your escape. You stand at the near end controlling a translucent paddle which reflects balls back toward the wall. Break all the bricks in the multi-layered wall to reach the next corridor.

Enhanced by rich graphics, the stereoscopic depth illusion works beautifully in 3D BREAK-THRU, especially when the next room begins to appear beyond the holes in the wall! As you reach the more complex levels some of those things floating at you aren't so friendly anymore! Defend yourself by firing off bits of your paddle, but with every shot, your paddle shrinks in size!

And 3D BREAK-THRU also works in monoscopic mode. So if you want to check the game out but don't yet have the glasses, don't let a lack of liquid crystal prevent you from wandering these haunted corridors.

3D BREAK-THRU
ST0253 $39.95
REQUIRES: Color Monitor

BYTE *picks FLASH*
— Top Atari terminal program!

FLASH 1.6™

The Most Popular ST Terminal Program

by Joe Chiazzese and Alan Page

Thank you FLASH owners! There are more than 25,000 people who have made FLASH the most popular terminal program for the Atari ST. We'd like to take this opportunity to thank you for your positive word-of-mouth. We're very proud of FLASH and, naturally, happy that so many of you feel the same way.

Since FLASH was introduced, we've added more and more features. In fact, the *new* features have been described so thoroughly in recent Catalogs, we've forgotten to mention the original functions that made FLASH a best-seller to begin with.

So, for those of you who do not yet own FLASH, here's a collection of its most popular features. (If we miss a few, would you veteran FLASH owners drop us a line and tell us what we left out? We'll be sure and put it in the next Catalog.)

- Flip instantly between online screen and capture buffer with a single mouse click.
- Giant capture buffer automatically adjusts to available RAM — entire session automatically placed in word processor.

FREE! Try FLASH now and get $15.00 of CompuServe access time. This effectively brings the price of FLASH down to $14.95! And new FLASH owners join the GEnie network free. No registration fee. How can you lose?

- Built-in GEM word processor includes:
  - Adjustable word wrap
  - Mouse controlled
  - Block Cut & Paste
  - Reformat text blocks
  - Automatic Search
  - File merge
  - Buffer or text-block output to disk, printer, or RS232 port
  - High-speed window scroll
- Create custom "script" files for unlimited power and flexibility. (Over 90 commands, a full programing environment.)
- Twenty programmable function keys, which may be linked to disk script files.
- Typeahead buffer lets you scroll thru previous lines and resend them.
- Command line alternative to mouse control — includes history buffer.
- Two clocks: Real-time and Elapsed time.
- Bullet-proof file transfers at speeds up to 19,200 baud. Protocols include:
  - Xmodem (CRC & checksum)
  - Ymodem batch
  - B/B+ Protocol (*CompuServe*)
  - ASCII and DC2/DC4
- Mainframe terminal emulation includes:
  - DEC VT100 w/character graphics (and VT52)
  - Vidtex color graphics (*CompuServe*)
- Supports 110 baud for Telecom Devices for the Deaf.
- Ability to run other ST programs from inside FLASH.
- Custom translation tables automatically filter incoming or outgoing characters.
- Built-in ARC commands.

"FLASH is my #1 choice on the Atari ST."
— Ron Luks, Founder of CompuServe's SIG* Atari and Atari Developer's Forum.

FLASH is the fastest, most complete, most reliable terminal program I've used. . . "
— M. Ratcliff, **ANALOG Magazine**

Ask Anyone
So if you don't own FLASH, you should. As we've said before: If you're looking for an ST terminal program, ask any online veteran about FLASH. They'll be glad to tell you. And we wouldn't say that if we weren't sure of the response.
FLASH 1.6
ST0220 $29.95
(Free update with original disk and $5.00 shipping. BUT SEE SHADOW OFFER BEFORE YOU DECIDE.)

FLASH OWNERS: BUY SHADOW & GET FLASH 1.6 FREE!

FLASH version 1.6 includes built-in SHADOW access (see SHADOW description, opposite page). This means that FLASH calls SHADOW directly with no need for the SHADOW desk accessory (though you still need the SHADOW program).

The SHADOW disk includes a "patch" program which automatically updates FLASH v. 1.51/52 to 1.6.

Add it up: A FLASH upgrade is free with your original disk plus $5 shipping. SHADOW includes $15 free CompuServe time. The FLASH 1.51/52 owner who orders SHADOW saves $20 and effectively gets SHADOW for $9.95. That's only $4.95 more than you'd pay for us to ship the FLASH update by itself.

FLASH COMMAND CARDS

FLASH-CARDS
TH9025 $7.95

Soup up your modem . . . in software!

QUICKTRAN™
The Modem Accelerator

by Adrian Jovanovich
Works with FLASH, or by itself.
Your 1200-baud modem can now transfer files at over 2000 baud . . . 2400 baud now flies at 4000 baud . . . The telephone company can't stop you. It's totally legal!

QUICKTRAN comes to you as two disks, each with an identical desk accessory. One QUICKTRAN accessory shrinks the file you're sending — in real time, using better compression than ARC.TTP. The second accessory — on the receiving end — expands the file to it's original size as it's coming in over the phone lines. Why spend hundreds on a faster modem when you can transfer files in almost half the time with QUICKTRAN?
QUICKTRAN
(2-disk set)
ST0247 $34.95

BBS and Kermit Accessory for Flash!

REMOTE CONTROL ACCESSORY & KERMIT PROTOCOL™

by Joe Chiazzese and Alan Page
Instant Kermit protocol within Flash with this custom desk accessory. Plus Remote Control accessory turns Flash into a mini-BBS.
REMOTE/KERMIT
ST0226 $24.95
REQUIRES: FLASH ST0220

Be in two places at once.

New!

SHADOW

The Multi-Tasking File Transfer Answer

by Double Click Software

Here's a background file transfer program that works. We've run SHADOW past our online experts and consulted with FLASH author, Alan Page as well. They all gave it high marks. It's a smooth, solid piece of programming that does its job while staying modestly in the background. No more waiting for file transfers.

SHADOW gives you transparent background file transfers with any GEM terminal program. While you are in the process of downloading or uploading files from an online service or a BBS, you can exit to the desktop and run any program you wish. Here's your opportunity to get that correspondence done — or play that favorite game. Once the transfer has begun, you can do anything but turn off the AC power switch. While in other programs, a block countdown is displayed in the corner of the screen; an optional bell alerts you of its completion. SHADOW is elegant.

Let's say you use FLASH. Wouldn't it be nice to browse through the capture buffer — or do some editing while waiting for that file to download? Now you can. You can even load files into the capture buffer, save them to disk, or print out blocks — your I/O is completely free.

SHADOW works with X-Modem (checksum, CRC, or 1K CRC), Y-Modem batch, CompuServe's B-Protocol, B+Protocol, and ASCII. To make background file transfers 100 percent secure, SHADOW even survives system resets! Did a program crash on you in the middle of an important download? No problem. Press the reset button and watch the download continue. You can even switch resolutions or change monitors during a transfer. SHADOW is robust.

All 50 states 6AM-6PM PACIFIC TIME
Monday-Friday MasterCard, VISA Only

Works with every GEM terminal program.

A desk accessory is built into SHADOW for easy access to a background autodialer and a VT52 terminal for standalone operation. And for you programmers, we've included sample source code and all the information you need to access SHADOW's routines from your own programs.
SHADOW
ST0259 $29.95

FLASH OWNERS: BUY SHADOW & GET FLASH 1.6 FREE!

Each SHADOW disk includes a "patch" program which automatically updates FLASH v. 1.51/52 to 1.6. FLASH version 1.6 includes built-in SHADOW access so that FLASH calls SHADOW directly with no need for the SHADOW desk accessory (you still need the SHADOW AUTO program). Check out the arithmetic on the FLASH page, opposite. It's a big savings.

PHA$AR 3.0™

Professional Home Accounting System and Register

by Marksman Technology

PHA$AR, the friendly, GEM-based, single-entry accounting system has just gotten friendlier. Marksman Technology listened to your suggestions, and the result is now available — Version 3.0.

Just some of the new features include:

- Batch-print window addresses on checks
- Custom-define screen colors
- Fiscal year accounting
- Sort by name as well as amount
- Enhanced calculator: parenthetical expressions/5-level memory buffer
- Recall most-recent transactions
- Abort account reconciliation anytime
- Improved Tax program doubles as report writer
- Coded and recompiled to save on disk space

Standard features include:

General Features

- 130 expense/income categories
- 40 accounts (VISA, checking, etc.)
- Up to 500 transactions per month
- Custom check printing
- A.I. parser predicts input, minimizes typing
- Instant context-sensitive help
- Relational design integrates financial data

Transactions

- Automatic transfers between accounts
- Split-category transactions
- Create transaction macros for repetitive entries
- Point-and-type spreadsheet-style relational summary update

Financial Analysis

- Easy budget setup and maintenance
- Analyze loan/savings plan
- Display multiple loans simultaneously for easy comparison

Reconciliation

- Confirm transactions with a single keystroke
- Display outstanding transactions for any account

IBM and Amiga users say: "The first home accounting package I have found in five years that is actually usable." — **Mark Baldwin, Littleton, CO**

"I am enjoying your tutorial almost as much as I admire the power and versatility of the software itself." — **Joe Joyce, Huntington, VT**

Reports

- Clearly formatted printed reports include:
  - Account Summaries
  - Category Summaries
  - Net Worth Statement
  - Tax Calculations
- Display or print total income/expenses, monthly or year-to-date
- Sort categories in any order
- Built in data graphing

Date/Address Organizer

- Store up to 250 names, addresses and phone numbers
- Integrated scheduler stores special occasions
- Display calendar with highlighted special occasions
- Optional auto-alert reminds you of important events

Tax

- Design your own tax forms—never out of date
- Calculate tax liability in less than one minute
- Project tax liability at any time

PHA$AR
ST0237 $89.95
(Upgrade $20 with original main program disk.)

BASE TWO™

The GEM Database by the Authors of DBMASTER ONE

The next step in databases!

by Dan Matejka and Stanley Crane

It's no fun re-learning your database commands every time you boot it up. And those simplistic "filecard" databases just don't have the power to do the job. Or, maybe you've just created your custom database, entered 5,000 records, and now you want to print a report. . .good luck. You need a degree in programming just to get some decently formatted hard copy.

Dan Matejka and Stanley Crane have eight combined years of experience writing databases on computers ranging from the IBM PC to the Apple Macintosh. And their databases range in complexity from the extremely powerful and complex IBM PC DB MASTER to the familiar, introductory DB MASTER ONE on the Atari ST. They've watched the ST database market grow—and they've spotted a gap: until now, ST databases have been either too simple, or too complex. Until now, ST owners were limited to easy-to-use, inflexible "mailing lists," or involved, programmable "throw-backs" to the CP/M or MS-DOS world. Until now, there was no intuitive, yet powerful database featuring an adaptable report generator. *Until now.*

BASE-TWO fills the gap. Entirely GEM-operated, DB MASTER ONE owners will find it familiar, yet far more powerful. Look over some of the features and see if it solves your problem:

INSTANTANEOUS SORTING!

size	number records	sort time
512K	5,000	5.1 sec
1 Meg	10,000	9.7 sec
2 Meg	20,000	19.2 sec
4 Meg	50,000	46.1 sec

Using a sample eight-field mailing list.

- Variable field types:
  - Implicit (default)
  - Alpha
  - Numeric
  - Date (calculable)
  - Formula
- Formula fields automatically calculate results from several fields in same record
- Adjustable numeric decimal placement
- Re-edit database at any time without losing data
- User-definable .DIF file creation for software compatibility
- DB MASTER ONE conversion program
- On-line Help screens
- Optional mouse or keyboard control
- 64 character label length
- 100 fields per record
- Multi-level Search and Sort
- Totally RAM-based for instant action
- Format disks from within program

The intuitive BASE-TWO **Report generator** includes:

- Multi-line field word-wrap; screen and printer
- Completely adjustable label or column-format report
- Optional, automatic date, time and page numbering
- Print reports to screen, printer, or ASCII disk file for word-processor editing
- Optional subtotal printout
- Adjust number of records per page
- Double-line report headers
- Place "comment" text anywhere
- Customize with printer control codes
- "Soft" field borders for autofield truncation
- Single-sheet or continuous feed option
- Store 10 custom reports for each file
- Up to 100 unique fields per report

BASE TWO
ST0246 $59.95

DB MASTER ONE is a registered trademark of DB MASTER Associates.

All 50 states 6AM 6PM PACIFIC TIME
Monday-Friday MasterCard, VISA Only

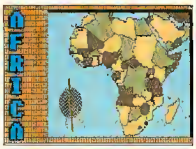
The world on a disk. Your eye in the sky.

MAPS AND LEGENDS™

The Cartographer

STEREO Version

by Harry Koons and David Chenette



Float over any spot on earth, from any altitude — in stereoscopic depth, if you wish! MAPS AND LEGENDS has become our most consistently selling product. And no wonder! As the word-of-mouth spreads, people naturally want to experience this fascinating and educational program.

MAPS AND LEGENDS accurately plots Earth land masses on your Atari screen using one of eleven map perspectives including: Orthographic, Foucault, Mercator, Flamstead, Cylindrical, 3D Globe and more. Adjust latitude, longitude, and altitude to place yourself over your home town — or over exotic faraway lands!

Custom Overlay function lets you design your own maps, or use the DATAMAP disks (this page) and load pre-designed overlays. Save multiple map views as CYBER PAINT animations!

MAPS AND LEGENDS 3.0
ST0202 $34.9S
(upgrade is $1S)
REQUIRES: StereoTek Glasses for stereoscopic effect

LET'S GET TECHNICAL

Packed with features, including: Stereo Compatibility, Built-in 9000-Coordinate Database, 11 Different Map Perspectives, Plotting from any altitude, Works in all 3 screen modes, Built-in Paint System (and compatible with CYBER PAINT, DEGAS and NEO), Multi-font Labeller, Custom Overlay Plotter (create your own maps—build your own map databases), Auto-locate Mode (reads coordinates, distance and bearing from maps) and so many more that we don't have room to list them all.

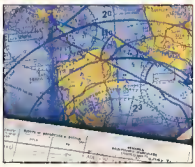
The professional flight planner has just gotten better!

New!

THE NAVIGATOR 2.0™

by Scott D. Stephenson

Works with MAPS AND LEGENDS



When author (and navigator) Scott Stephenson wrote the professional, automated flight planner, THE NAVIGATOR, he requested suggestions for improvements to the program. Result: *Big* response from pilots all over the world! So okay, here it is. Version 2.0 of THE NAVIGATOR. With so many new features we had to add a second disk! Just a few of the many improvements include:

- Greatly expanded ICAO databases (2000+ waypoints in US)
- Built-in Navigation Toolkit for database modification
- Quick-access, onscreen 'Micro Menu'
- Increased printout options
- Route 'Flip,' 'Return,' 'Move row'
- Expanded to 60 rows
- Equal Time Points
- Estimated time of arrival
- User preferences file
- R/DME up to 999NM
- Improved scrolling
- Faster calculation
- A-P drive paths
- On-line Morse code table

And much, much more, as you'll discover.

Private pilots, military pilots, navigators (ocean-going as well as air), and commercial operators can use this amazing program to create accurate, detailed flight plans. Amateurs, arm-chair flyers, teachers and students of navigational theory can discover how the professional navigator plans his flight, compensates for wind direction, establishes waypoints, and calculates times and distances. THE NAVIGATOR comes complete with European ICAO, Asian ICAO, and US ICAO databases, and includes a special MAPS AND LEGENDS overlay function to create custom, graphic map overlays.

THE NAVIGATOR
ST0245 $49.9S
(Upgrade to 2-disk set only $15. Please include original disk.)

Datamap Collections

DATAMAPS II™

Rivers & Highways

by David Murray

New!

New DATAMAP overlay files create the world's rivers, the great highways, plus the Great Wall of China, the Alaskan Pipeline, the Trans Siberian Railroad, and The Orient Express! A fraction of the rivers contained on this disk include North American: *Yukon, Saskatchewan, Mississippi, Platte*; South American: *Amazon (plus tributaries), Plata, Magdalena*; Europe: *Volga, Danube, Rhine*; Africa: *Nile, Congo, Orange*; Asia: *Ganges, Irrawaddy, Yangtse, Huang-Ho.* Some of the highways: US Interstates, Pan American, Trans Amazon, and many more.

DATAMAPS II
ST0258 $24.9S
REQUIRES: MAPS AND LEGENDS 2.0 or greater

DATAMAPS I™

Boundaries of the World

This original DATAMAP collection contains overlay files to create National Political Boundaries: Europe, Latin America, S. America, Asia, Africa; Provincial Boundaries: Australia, Canada, China, U.S.S.R.; plus bonus Historical maps.

DATAMAPS I
ST0227 $24.9S
REQUIRES: MAPS AND LEGENDS 2.0 or greater

P.I.E.™
Professional Icon Editor
by Alex Leavens

Customize Your Desktop Icons! Redesign your Trash Can to look like a paper shredder.

P.I.E. is the *Professional* Icon Editor — for programmers as well as desktop artists. Author, Alex Leavens has added icon code generation so you can now design icons for your own programs. And while he was at it, he added a bunch of grapbics improvements to delight the artist in you.

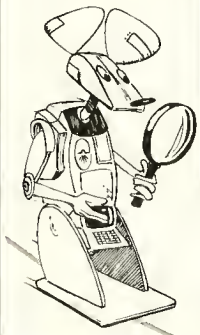
New features include:

- Generates Resource Construction Set code for icon images; P.I.E. can be used from within the Resource Construction Set to create and edit icons for the resources you're currently working on!
- Improved Editing Features:
  - Faster Print and Line Modes
  - New Image Cut & Paste Functions
  - Selectable Fill Patterns
  - Horizontal and Vertical Image Flip
  - Multiple Sub-function Menus added
  - Nine-level Bi-directional Undo buffer
- In-program Desktop Icon Preview mode
- Improved Keyboard Resource

P.I.E.
ST0248 $29.95

MACRO MOUSE™
The Mouse Recorder
by Charles Johnson

New!



Imagine turning on your computer, then sitting back and watching the mouse cursor glide across the desktop, load GAD-3D, *and create its own space ship!* And you only touched the power switch. It's as if a ghost were operating your ST!

MACRO MOUSE records all mouse movements, button clicks, and keyboard presses, then plays them back in real time. Up to four recordings can be held in memory, or you may save your macros to disk to play later — or link several together and play them sequentially.

It's easy to use. Set MACRO MOUSE on Record and use your computer. MACRO MOUSE automatically records each step. Avoid boring, repetitive operations — let MACRO MOUSE do it for you. Create spreadsheet macros, or automate your favorite telecom program. Special freeze feature lets you insert instructional text at any point for demos. No GEM program required.

Features include:

- Auto-run macro at power-up.
- Endless loop playback with protected keyboard for demos.
- Text-message with timed display or keypress exit.
- Set "loop points" anywhere.
- Pause & restart playbacks with a keypress.
- Load DEGAS fonts for custom display.
- Chain macros.

Bonus Utilities!
Order MACRO MOUSE now, and receive these two bonus programs: SUPER SELECTOR replaces the dismal GEM file selector. It sits in the AUTO folder and works with any program that calls the standard GEM file selector. Change drives with one click; file sizes plus free disk space displayed; plus much more. Once you've used it, you'll never go back!

ALTHELP is a collection of handy utilities accessed by the [Alt][Help] key. Not a desk accessory, ALTHELP is accessable anytime from TOS as well as GEM programs. Includes:

- Adjust color registers & instantly switch to one of 10 custom palettes anytime.
- Set keyboard sound, and repeat & delay rates.
- Set disk write-verify on/off.
- Display free RAM.
- 4-function, 32-bit dec/hex calculator.
- Gold or warm reset from keyboard.
- Custom screen printing routines.
- Machine language: takes only 10K.
- Much more...

MACRO MOUSE
ST0260 $34.95

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ST Sound Tools

Why reinvent the wheel?

G.I.S.T.™
G.I. Sound Tool

by Lee Actor & Gary Levenberg for Synthetic Software

You're a programmer and you want to add sophisticated sound to your program — without slowing it down. What do you do? Depends on how much time you want to spend.

You could knock out a few all-nighters and end up with a stomach full of junk food, a caffeine headache, and your own massive personal code that sounds for all the world like the Merry Chipmunks playing table tennis.

Why reinvent the wheel? Lee Actor and Gary Levenberg have already written the code for you. They've squeezed every possibility from the ST's sound chip, then added a GEM-easy interface so you can quickly create your own sounds and save time, money, and frustration. Want a sound? Simple: create it in G.I.S.T., save it as compressed, memory-efficient data, link their driver with your code and call the sounds. Completely interrupt driven, it won't affect the speed of your program.

And you don't have to know sound to create sounds with G.I.S.T. We've put a whole library of sounds on the disk, and the G.I.S.T. interface is so friendly, a few moments of experimentation and you'll have a whole new library of sounds. But for those who *do* know sound, here are some of the things G.I.S.T. offers:

- Volume ADSR to shape attack, decay, sustain, release
- Volume LFO for Tremolo effects and AM (Amplitude Modulation)
- Frequency ADSR— frequency shifts up to *+/- 3 octaves!*
- Frequency LFO for Vibrato effects and FM (Frequency Modulation)
- LFO delay lets you add effects at any point in the sound
- MIDI-compatible! Use your keyboard to play the GI chip
- Three sound windows may be open at once

Works with GFA BASIC, Personal Pascal, most C Compilers, CYBERMATE in the CYBER STUDIO, and Dr. T's MIDI Recording Studio.

G.I.S.T.
ST0233 $34.95
GFA BASIC™ Michtron Personal Pascal™ O.S.S.

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by KUMA

Now get the easiest-to-use spreadsheet ever at a rock bottom price. Don't wait any longer. Get A-CALC PRIME now at this incredible price.
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by KUMA

Use A-CHART to automatically turn your A-CALC PRIME spreadsheets into beautiful graphs that are DEGAS compatible.
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CRYSTAL

by Jim Thompson

CRYSTAL gives you the power of MS-DOS while retaining the look and feel of GEM with the eight icons the Digital Research forgot.
BB9019 WAS ... **$24.95**
NOW ONLY ... $19.95

A-RAM

by KUMA

Power, speed, flexibility, and, the best print spooler you've ever seen makes A-RAM the RAM disk for you.
BB9017 WAS ... **$19.95**
NOW ONLY ... $12.95

STAR STRUCK — THE ASTROLOGER

by Harry Koons

Follow your lucky stars with this GEM-based program that instantly creates charts using formulas for the nine most popular historical house systems.
BB9014 WAS ... **$24.95**
NOW ONLY ... $19.95

A-SEKA

by KUMA

At last an Assembler, Editor, and Monitor/Debugger combo at a price you can afford. A-SEKA is the machine language assembler for programmers looking for ultra-fast response time.
BB9018 WAS ... **$34.95**
NOW ONLY ... $19.95

C.O.L.R. OBJECT EDITOR

by The Rugby Circle

Use C.O.L.R. OBJECT EDITOR to create sprites and bit-mapped game objects using your original art or low-res picture from any ST paint program.
BB9016 WAS ... **$19.95**
NOW ONLY ... $12.95

RED ALERT

by Stanley Crane

Don't miss this opportunity to pick your own Ground Zero with RED ALERT, the game that's the perfect blend of strategy and arcade action.
BB9015 WAS ... **$24.95**
NOW ONLY ... $15.95

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Or buy 4 and get 2 free.

In fact for every two products you buy we will send you one free. Here is all you have to do.
Select any two 8-bit products. Then choose a third 8-bit product for free.

This offer good on Cotolog products for the 8-bit machines only.

Offer good through Sept. 30th 1988.

RAMbrandt
Atari Design Studio
by Bard Ermentrout

The ultimate paint software . . . for under $20.00! It took our technical staff three hours to step through each feature.

Use the built-in programmer's toolkit to enhance your own programs or picture files. Or just doodle with RAMbrandt for the fun of it.

Here are some highlights from RAMbrandt's long list of features:

- Works with joystick, Koala Pad or Atari Touch Tablet, or both joystick and graphics tablet.
- 128 colors on-screen at once in any mode with easy one-key access to Display List interrupts. Works in all modes.
- Animation mode (capture up to 32 frames and flip through them at any speed — preview Moviemaker ideas instantly).
- 130XE RAMdisk support! Store up to eight different pictures in RAM at once and flip through them instantly. Cut and paste between pictures.
- Save and Load pictures in formats compatible with Moviemaker, Microillustrator and Micropainter.

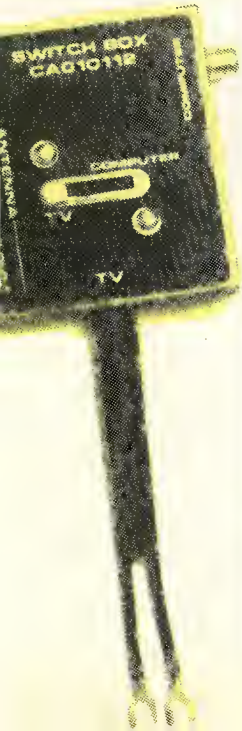
RAMbrandt
AP0157 $19.95
REQUIRES: 48K RAM, One Joystick and/or Koala Pad or Touch Tablet

BACKTALK 1.2

by Steve Ahlstrom, Don Moore and Don Curtis

This is the only programmable 8-bit modem software available. BACKTALK is easy to use. "Script" files can run automatically—you won't have to download anything yourself. Three protocols: Xmodem (with or without CRC), Amodem and Xon/Xoff. Supports 300, 1200, and 2400 baud modems, ASCII/ATASCII translation, full and half duplex. Supports Hayes-compatible and Atari 1030/XM301 modems, or load your own modem handlers. 130XE users can download files to RAMdisk.

BALKTALK
AP0154 $19.95



THE ENHANCEMENT DISKS (A 2-disk Set)

by Robert Wilson

Here are four *packed* disk sides of super utilities and programs for use with B/GRAPH, the most powerful Atari 8-bit business graphics software ever. You can use many of the features on THE ENHANCEMENT DISKS without owning B/GRAPH, but they are primarily for use with B/GRAPH. THE ENHANCEMENT DISKS' many features include:

- Bubble charts
- Opposed bar charts
- Segmented horizontal bar charts
- Loan amortization schedules
- Instant switching of plotted variables

THE ENHANCMENT DISKS support Atari 1020, Radio Shack CGP115 and Monnesmann Tally Pixy plotters for clear presentation. Plotter features include:

- Exploded pie charts
- Floating bar charts
- Plotting of algebraic expressions
- 17 factors per graph with overlays
- Left and right side scaling

THE ENHANCEMENT DISKS plus B/GRAPH gives you a set comparable to business presentation systems worth hundreds of dollars on other computer systems.

AP0190 $19.95
REQUIRES: Atari BASIC
RECOMMENDED: B/GRAPH
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SOLID OBJECT MODULE

by Bord Ermentrout

Easily create 3-D objects with RAMbrandt. 8 different primitives: Sphere, Torus, Cylinder, etc. Combine primitives to make complex structures. Then flip into RAMbrandt to complete your picture. This module will not rotate objects, but it will do just about everything else: 4, 8 or 16 level grayscales, backlighting, point source lighting, clipping window lets you use parts of objects, undo command, and many more . *If you use RAMbrandt, you need SOLID OBJECT MODULE.*

SOLID OBJECT MODULE
AP0182 $15.95
REQUIRES: 48K RAM, RAMbrandt

COLOSSUS CHESS 3.0

by Martin Bryant, English Software UK

The ultimate computer chess—for all levels of players. Let's you watch & learn while COLOSSUS CHESS consider thousands of moves. Many simulation modes, adjustable playing speed and style.

COLLOSUS CHESS 3.0
AP0161 $15.95
REQUIRES: 48K RAM

CHAMELEON CRT TERMINAL EMULATOR

Version 4.03

Written in machine language by John Polevich

Turn you Atari into one of five popular terminal types: Glass TTY, ADM-3A, DEC VT-52, IBM 3101, ASCII, plus a test terminal. Supports tab, backspace, line feed (on/off), form feed, bell signal, speeds up to 9600 bps, wide screen 80 and 132 column emulation, and more! Flexible enough for use with UNIX operating systems. You can customize *all* terminal parameters to log on to non-standard systems like MCI MAIL. Supports file transfers and features on all Atari 850-interface, 835, 1030 and XM301. Kermit and Xmodem file transfer capability.

CHAMELEON
AP0113 $19.95
REQUIRES: 48K RAM

INTERLISP/65

by Special Systems Software

Get the most out of your Atari's graphics and sound capabilities with INTERLISP/65. INTERLISP/65 is a subset of the standard "INTERLISP" dialect of LISP, the symbolic language of Artificial Intelligence. INTERLISP/65 features over 70 predefined functions, including a special graphics buffer initialization sequence, and the TRACE utility for detailed debugging. Additional features include eight digit, floating point arithmetic, PEEK, POKE, XIO for access to monitor and hardware functions, STICK and STRIG for game controller input, and example LISP programs.

INTERLISP/65
AP0191 $19.95

PICTURE PLUS 3.0 and LISTER PLUS 1.5

Non-Standard Magic!

by Chet Walters

This 2-disk set gives you complete command of your dot matrix printer!

PICTURE PLUS works with nearly any DOS, even with RAMdisks. Lets you translate pictures between Micro-Illustrator, SuperSketch, Paint, Fun With Art, 3/Graph, Movie Maker, Micropainter, Atari Light Pen, Atari Touch Tablet, Koala Pad, LOGO, Computer Eyes, Drawit, RAMbrandt (when converted), Graphics 7, 7+, 8, 9, 10, 11, and 15.

Work with all or part of the picture. Merge two pictures, reverse a picture left to right, turn it upside down, move it any direction, make a negative, change colors. Add text anywhere, in any color(s), any font(s), in 6 sizes.

Print screens in four sizes from 3" x 4" to 8" x 14". Supports Epson, Gemini, Prowriter, Okidata, color IDS, color Mannesman Tally and compatibles. Custom printer installation handles most others.

LISTER PLUS prints anything exactly as it appears on your screen.

PICTURE/LISTER
AP0179 $19.95
REQUIRES: Atari BASIC
Optional: Dot Matrix Graphics Printer

ENVISION

by Darrel Schebek

ENVISION gives you full control over your Atari 8-bit's 6 text modes. Create multi-screen, 8-way scrolling pictures and build effortless animations of up to 128 frames. Print out pictures or do fancy typesetting. Convert microscreens to character graphics indistinguishable from the original. Produce BASIC and Assembler SOURCE CODE. Do all this and more with ENVISION.

ENVISION
AP0185 $19.95
REQUIRES: Joystick
OPTIONAL: 8ASIC, MAC/65, SynAssembler, Epson-compatible printer

CHOP SUEY

by English Software UK

One of our most popular games ever. You'll thrill to this action-packed martial-arts simulation.

CHOP SUEY
AP0162 $15.95
REQUIRES: Joystick

Mercator Projection

Rotating Globe

EARTH VIEWS

by R.G. Wilson

A world atlas, a globe, and a game, all in one! Many different maps and views of the world, plus an adventure game. Educational *and* fun!

EARTH VIEWS
AP0141 $19.95
REQUIRES: Joystick

DEEP BLUE C COMPILER

by John Palevich

MATHLIB

by Frank Paris

Teach your computer the language of the ST. DEEP BLUE C is faster & more powerful than BASIC, and C is one of the most transportable languages. Pointers, recursive functions, and high-level control structures make complete software systems easy to design, implement and maintain.

MATHLIB is a complete library of math functions for DEEP BLUE C. 32 functions provide access to Floating Point & Trig operations. *Get both disks for the price of one!*

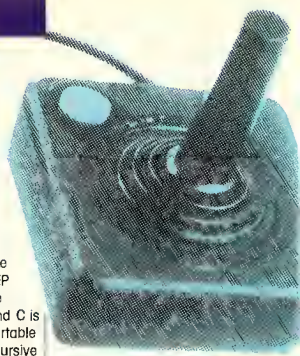
DEEP BLUE C COMPILER-MATHLIB
AP0188 $19.95
REQUIRES: Text Editor like WORD MAGIC

ORBIT-A TRIP TO THE MOON

by John D. Reagh

Boot Up & Blast Off on a trip to the moon! Enter low altitude lunar orbit, detatch landing module & descend to the moon's surface. Fuel consumption & other details add realism to this challenging simulation.

ORBIT-A TRIP TO THE MOON
AP0168 $15.95
REQUIRES: 48K RAM, Joystick



BASIC VIEW

by Softview Concepts

This is a utility all BASIC programmers will want. Written entirely in machine language, the BASIC VIEW window shows the actual execution of your program code while the program is running. See which line of code is affecting the program while it actually happens.

Features include:

- Joystick control
- Current line highlit during program execution
- Adjustable program speed
- Shows updated contents of variables while program executes
- Stop, skip to any line, then restart your program at any point
- Menus shows all variables, arrays, strings in alphabetical order
- Examine dimensional array, structures, elements and memory locations
- "Find" command for instant search of any variable or array element by name

BASIC VIEW
AP0192 $19.95

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* You pay applicable toll charges.

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European Space Agency (ESA) — Satellite deployment simulation
Rockwell Space Systems — Space Station division
General Dynamics, Ft. Worth — Human factors design
NASA, Ames Research Center — Human factors design
Yale University — Dept. of Physiology exchange program with Shanghai University, China
Forensic Computer Graphics — Accident reconstruction
Industrial Light and Magic — Computer displays for Disney rides
One Pass Video — Animated storyboards for quick concept design
3DV, SF — Low-cost 3D modelling tools for their Iris workstations
REZ-N8, LA — 3D modelling for animations rendered on supercomputers for broadcast TV
General Motors — Project Trilby division
KTEH, San Jose — On-air station i.d. spots
Polaroid Holography Lab, Cambridge — Hologram generation

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If you're using any of our software for interesting applications, please drop us a line.

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   e. California residents must add 6.5% sales tax on merchandise total (shipping and handling are not taxed).
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